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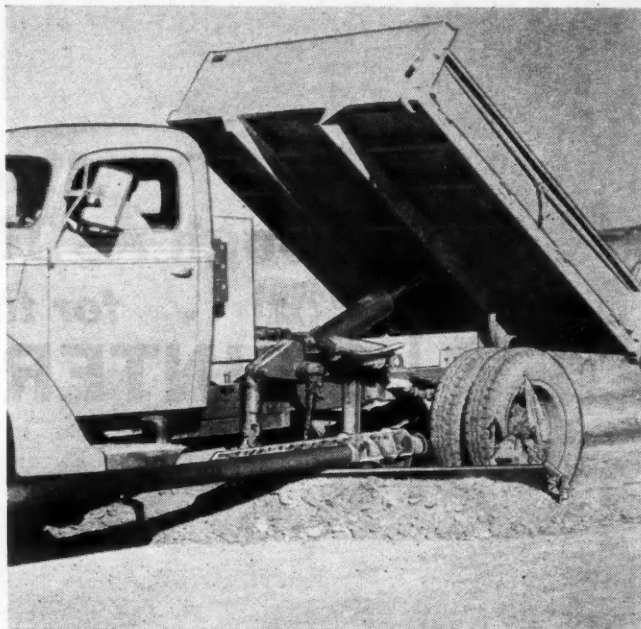
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INTERNATIONAL Trucks



by GEORGE T. HOOK

Octane Ratings Down . . . Parts Picture Mixed . . . Financial Help Unlikely . . . Private Carrier Program . . . Leasing Charge Objection . . . Tire Costs Up 20% . . . Truck Price Increases . . . Turmoil in ODT . . . 1944 Truck Quotas . . . 1945 Production Plans . . . Etc.

Octane Ratings Down

Octane ratings of gasoline are on the downgrade and fleet operators should check their gasoline supply regularly to avoid trouble. ODT has had reports from operators complaining that they were receiving regular grade gasoline of 64 octane rating. A spokesman for the Petroleum Administrator's office warned that because of military demands for high octane gasoline, civilian vehicles would be running on "imagination" by summer. Back in November, at a time when regular grade gasoline was officially degraded to 72, this department warned that quality would become progressively poorer and go as low as 65.

Parts Picture Mixed

The replacement parts picture remains mixed. As one ODT authority puts it "there is an ample supply of the garden variety of parts which

make up about 90 per cent of the total, but the 10 per cent continues tight." WPB approved an amendment to the L-158 parts order known as the "5 per cent reservation" of facilities but a qualification was inserted in the amendment which makes it doubtful that the provision will give the desired relief to the civilian parts supply. Comment on this amendment is made under "Editorials."

Parts Identification

After looking into the desirability of identifying parts made to pre-war standards so that purchasers would know what they were getting for their money, ODT has been assured by manufacturers that there are not enough of the substitute material or

wartime parts around to cause much trouble. Compulsory identification is not likely to be ordered, but it is recognized that trouble could be entirely avoided if the new parts were appropriately identified.

Financial Help Unlikely

The proposals of the ODT For-Hire Carrier Advisory Committee that the government finance for-hire carrier new vehicle purchases and provide a 50 per cent subsidy in the purchase of wartime tires have been under discussion by appropriate government groups but the prospects for any favorable action are reported to be dark. The indications are that nothing short of Congressional action can provide relief.

(TURN TO PAGE 36, PLEASE)



WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 35)

Private Carrier Program

A Private Carrier Program is being worked out by ODT which will call for voluntary joint-action plans among carriers in six or seven of the principal distributive industries. Included in this group are laundries and dry-cleaners, bakeries, dairies, food industries, meat packers and department stores. The program provides for Private Carrier Advisory Committees in all ODT regions and a guinea-pig approach to joint-action. Laundries will be the guinea pig and one large city will be chosen in which to try out the plan. Then when all the bugs are cleaned up the plan will be introduced in other cities.

Longenecker to Head JIOs

Now that ODT operation of Joint Information Offices is in effect truck operators may expect some spot-checking by ODT to determine if there is compliance with the registration provisions of Orders 10 and 43. It is expected that the man in charge of the ODT Traffic and Registration Section will be Ellis Longenecker, who is also chief of the For-Hire Carrier Section.

Leasing Charge Objection

Private carriers are reported to be dissatisfied with the leasing charge provisions of Order 10, and are continuing their efforts to effect a change. They want no taint of "hauling for compensation" under the guise of a leasing arrangement. They prefer a formula which would take into consideration driver pay, vehicle capacity and the time element and

which would arrive at a total operating cost for the particular vehicle to be leased. They feel that this method of leasing would assure fuller loads on leased vehicles and provide utilization of vehicles in line with ODT conservation objectives.

Tire Costs Up 20%?

Over-the-road haulers, already pained by increased tire mileage costs, are anticipating a severe case of cramps. The tire sizes they use will all be made with a sizable percentage of synthetic rubber which requires the use of rayon cord. When tire prices were frozen the rayon cord tires carried a list 12 to 15 per cent higher than cotton cord tires. On top of this ceiling prices were increased so that in over-the-road circles it is figured that compulsory use of rayon cord synthetic tires will increase tire costs about 20 per cent.

Truck Price Increases

Truck prices, too, are going up. Here are some retail list ceiling increases okayed by OPA: Chevrolet—134-in. Utility chassis and cab, up \$185 to \$895; 160-in. Utility chassis and cab, up \$180 to \$915; 160-in. Utility stake chassis and cab, up \$235 to \$1075.

Mack—ED, up \$275 to \$930; EH, up \$360 to \$2530; EHT, up \$300 to \$2575; LJ, up \$405 to \$5305.

Unbalanced Rationing

The wise, long-established and highly regarded practice of taking care of old customers before new customers is causing some mal-distribution of trucks, ODT informs this department. Each manufacturer receives copies of ODT-WPB rationing releases affecting his trucks so that he knows where one of his trucks is needed. ODT and WPB had hoped that manufacturers would dovetail shipments with these releases but several manufacturers have seen fit not to comply. If distribution should show serious signs of unbalance ODT may ask WPB to issue a directive compelling manufacturers to ship trucks in line with releases received.

1944 Quotas by Quarters

Instead of being off 25 per cent, as feared by WPB Automotive Division

realists, civilian truck production in the first quarter reached 10,329 to beat the 9,157 unit quota by over 10 per cent. What succeeding quarters will bring cannot be guessed, but here are the civilian production quotas: Second quarter, 14,562; third quarter, 32,164; fourth quarter, 32,164. These are subject to revision.

1945 Truck Production Plans

Late in April WPB was working on the 1945 truck production program and there was a likelihood that schedules would be set and allotments made early in May. The program under discussion called for 800,000 medium and heavy trucks, of which 471,000 would be for civilians. This 471,000 was part of the ODT's request for 771,000. The 300,000 remainder covered light trucks. If farm interests, backed by the War Food Administration and the Department of Agriculture, fight hard and talk convincingly enough the 300,000 may be added to the program, giving ODT all the trucks it requested, and making the overall planned production 1,100,000 trucks of all kinds.

Turmoil in ODT

For about a week in the early part of April the Motor Transport Division of ODT was in turmoil. It started when John Rogers sent in his resignation as assistant director. The new director, Col. Johnson, and a fellow I.C.C. Commissioner, talked Mr. Rogers out of the resignation and sent a letter out to all ODT offices announcing Mr. Rogers as the head of the Motor Transport Division. This delegation of authority conflicted with that of the Director of the Motor Transport Division—Harold C. Arnot, and Mr. Arnot submitted his resignation. This precipitated a parley into which representatives of motor carrier groups were drawn. It was a delicate matter, both men being well regarded. Mr. Arnot's able administration of the division was applauded on all sides and proved to be the support that continued him in his position as director. Mr. Rogers requested that his resignation be reconsidered; it was, and peace and order were restored to be marred only by the distant thunder of resignations in other divisions of ODT.

EDITORIALS

A Needed ODT Reform

THE Office of Defense Transportation is undergoing an orderly reorganization. This should provide what ODT has always lacked in Washington: efficient, business-like administration.

The late Joseph B. Eastman was a humanitarian. The lowliest ragpicker, wishing to appeal in person a district office's gasoline allotment for his one truck, would find Mr. Eastman's door wide open and Mr. Eastman ready to hear him out. What was true of the public was true of the ODT. Any man in ODT who out of zeal or pique felt it his duty to take an issue direct to the director found a welcome and a readiness to discuss the matter fully.

It was inevitable that advantage should be taken of this humanitarianism. Authority at the lower levels was flaunted; division heads found themselves by-passed time and again. Men with responsibilities found themselves with questionable authority. Section heads might not be loyal to their division chiefs, but everybody was loyal to "Uncle Joe." This loyalty to the big boss was the mainspring that enabled ODT to tick in the absence of efficient administration.

Recommendations for certain administrative changes were before Mr. Eastman at the time of his death and he was too wise a man not to have acted favorably on some of them if time had been spared him.

Responsibility and authority are being concentrated in able hands. But the reorganization would not be complete if it failed to provide the Division of Motor Transport with the authority and the means for pursuing every motor transport issue right up to the stratospheric levels of the War Production Board where issues are decided. For example:

The Division of Motor Transport recently decided that in 1945 civilian

users would need somewhat over 700,000 motor trucks. It worked out the material requirements for this amount and presented them to the ODT requirements division, which is the receptacle for all transport requirements—railroad, pipeline, waterway and motor transport—and which is headed by General Young, a railroad executive. When the motor transport requirement was presented in committee General Young is reported to have reacted unfavorably, to the effect that the amount of trucks requested was too damn high. Now General Young is the ODT representative on the War Production Board's Production Committee where the requests of the various government agencies are considered and programs determined. It may be that General Young is one of those rare individuals who can disagree with an objective and yet zealously seek its attainment with persuasive vigor and convincing argument. But a reasonable doubt is permissible. This doubt can be resolved by making the special pleader one who is a direct representative of the Motor Transport Division, qualified and able to explain and argue the merits of requests on which the preservation and promotion of highway transportation depend.

Another example: The For-Hire Advisory Committee of ODT pointed out that over-the-road for-hire carriers were in need of financial assistance and asked the Motor Transport Division to take the matter up with appropriate government agencies. The Division initiated the proposal and forthwith found the matter taken out of its hands. Every interested government agency was in on the discussion. The most interested group had no opportunity to plead the case.

The reorganization under way provides an appropriate opportunity for streamlining division activities so that every issue may have for its

furtherance, from conception to disposition, the services of a well-informed and able representative of the division directly concerned.

The L-158 Amendment

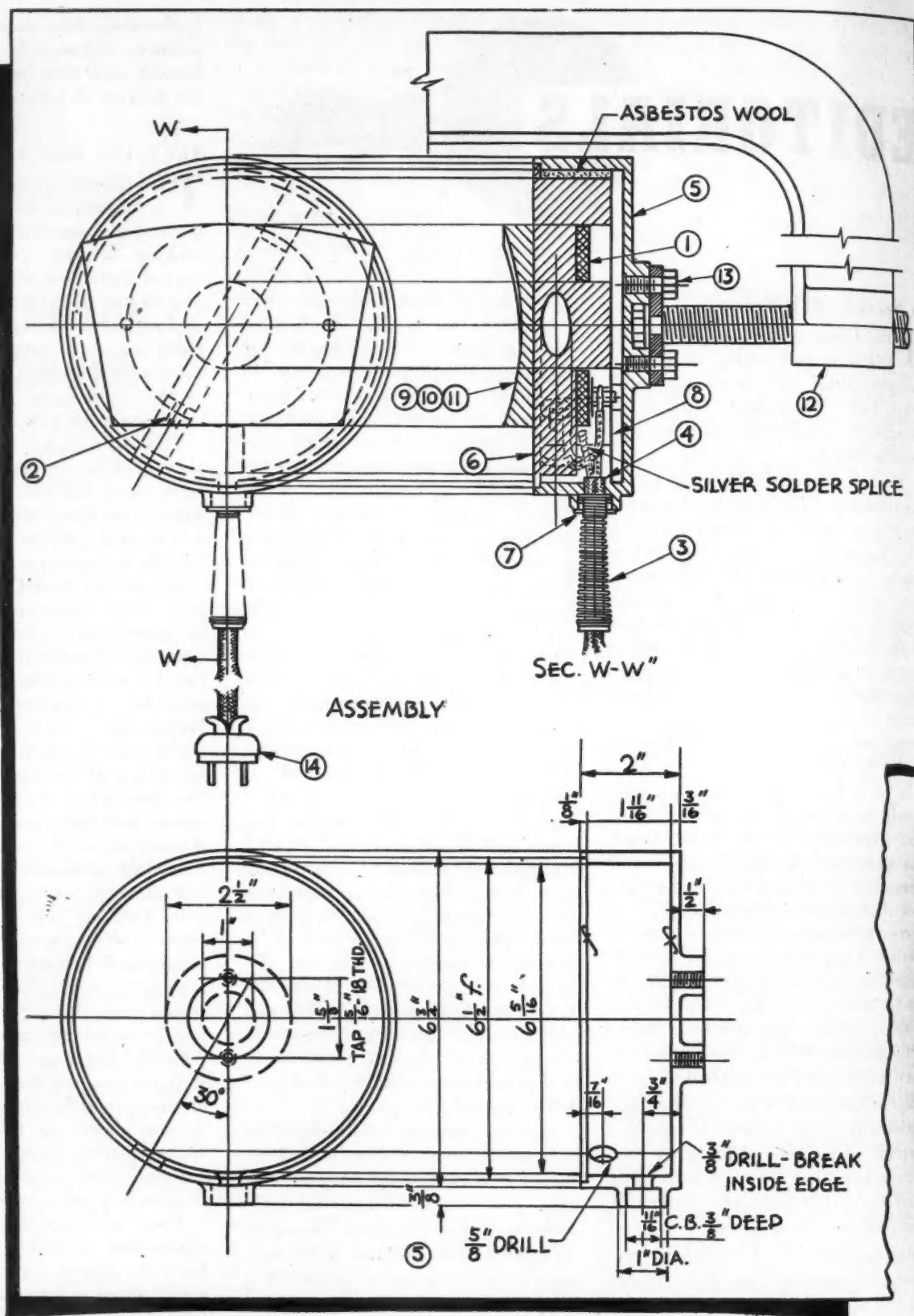
THE Army's Pentagon Building is too new to have any rat-holes in it, but somewhere in its higher ranking cubicles there is an ill-starred individual with the mentality of a mouse. He it is who thinks that civilian trucks, no matter how directly concerned with the war effort, are not entitled to a measly 5 per cent of the replacement parts of which there is a critical shortage.

This is a cruel construction to place upon an amendment to replacement parts order L-158 which the Automotive Division of WPB heralds as a boon to civilian truck operators. But the facts seem to warrant it.

Initiated by the ODT with the support of its parts industry advisory committee there was general agreement in all preliminary discussions that L-158 should be amended to reserve for civilian parts 5 per cent of facilities or of man-hours in plants which were occupied in excess of 95 per cent with military orders. Even the Automotive Division of WPB agreed that there was need for such a reservation of facilities and approved the proposal. And then, at the last moment, an order was issued from high up. The Automotive Division of WPB recanted and when the amendment appeared . . . signed, sealed and emasculated . . . it contained a qualifying phrase that nullified its noble purpose. This phrase permitted the 5 per cent reservation if it did not interfere with military orders. Since the express purpose of the amendment was to interfere with military orders to the extent of 5 per cent, the nullifying effect of the qualification is all too apparent.

There is a view that, even so, the amendment contains enough loopholes to permit any manufacturer with a shred of sympathy for civilian truck operators to devote 5 per cent of his facilities to parts for civilians. This may be so, but any manufacturer may be excused if he hesitates to stick his neck into a loophole that may turn out to be a noose.

The amendment as written should never have been issued. It should be amended to provide 5 per cent without qualification.

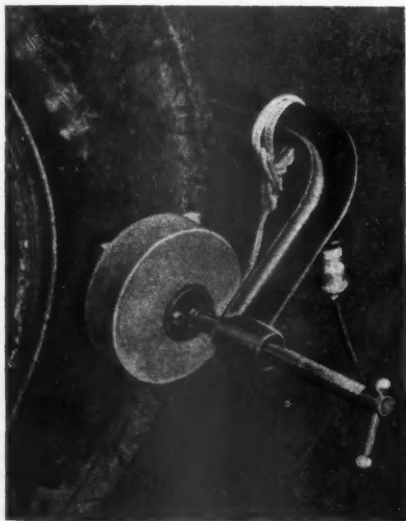
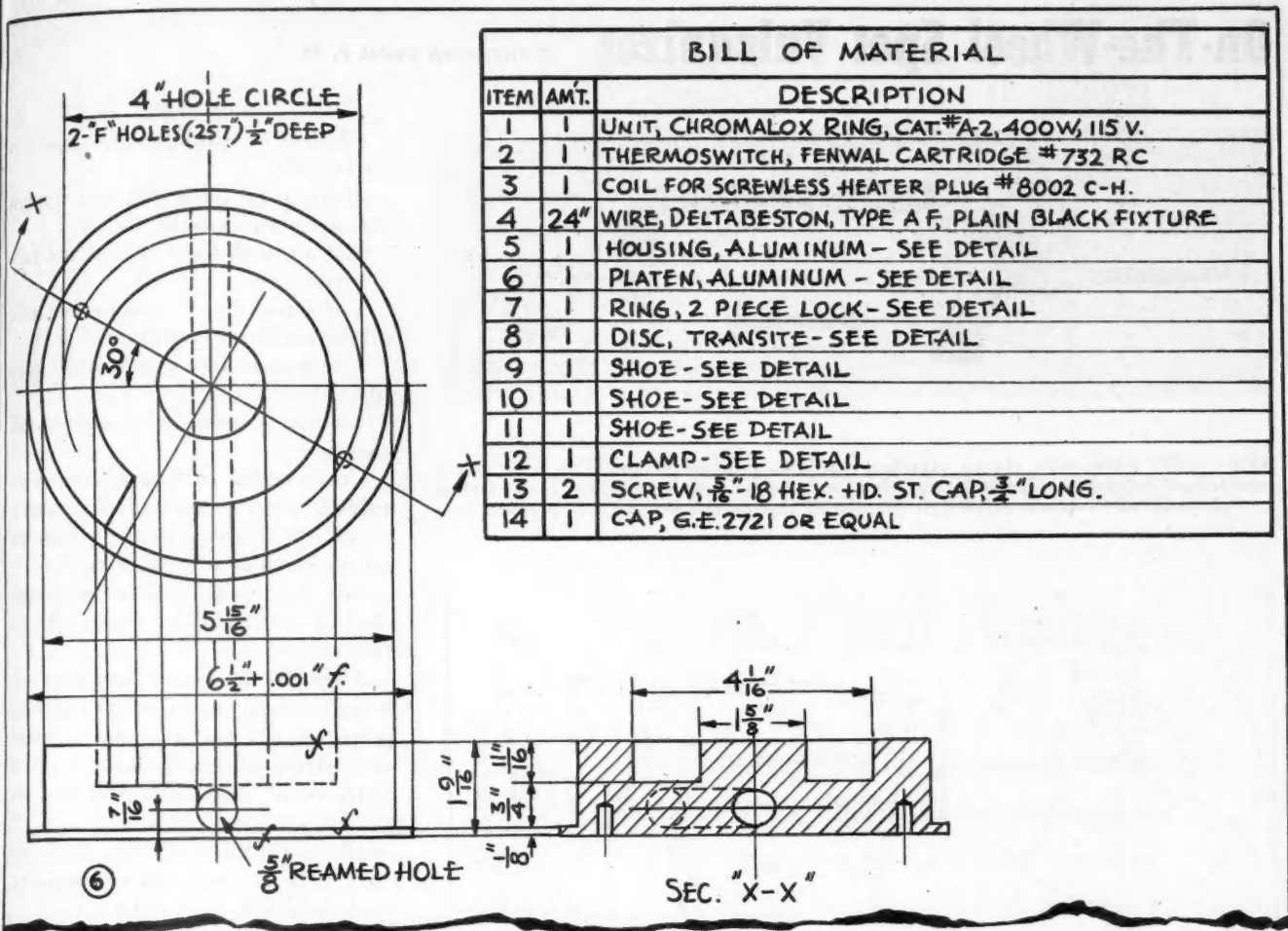


A METHOD for repairing a tire without removing it from the wheel, or the wheel from a vehicle has been developed by R. J. Owen, of the San Francisco Division,

Pacific Gas & Electric Co. It utilizes a small portable vulcanizer, illustrated and sketched here.

The vulcanizer consists of an electrically heated "hot plate" with ther-

mostatic temperature control, two removable contact plates that conform to tire surface when pressure is applied, and a clamp to hold apparatus in place and apply pressure. An



This shows the spot vulcanizer in action on the tire on the wheel. The sketches give complete details of this unusual unit which saves much time and labor.

On-the-Wheel Spot Vulcanizer

Portable outfit developed by fleetman
requires no more labor to make repairs
than it takes to dismount & mount tire

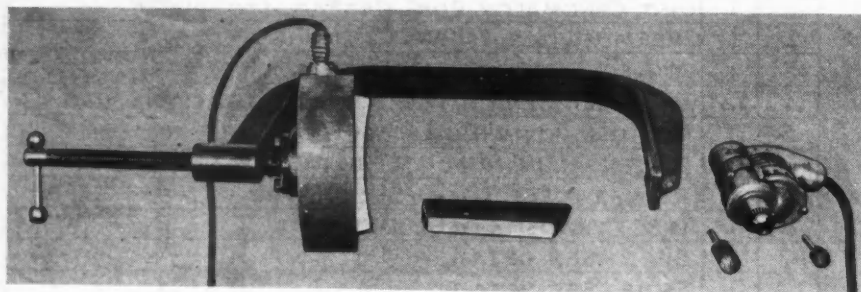
electric drill, a small rotary file, rubber cement and rubber "stripping stock" complete the equipment necessary to make repairs.
Cracks (including radial cracks),

abrasions, holes, etc., can be repaired in any location on tire, covering any reasonable area on any size tire, with the following limitations:
On 4-ply—one ply broken or cut.

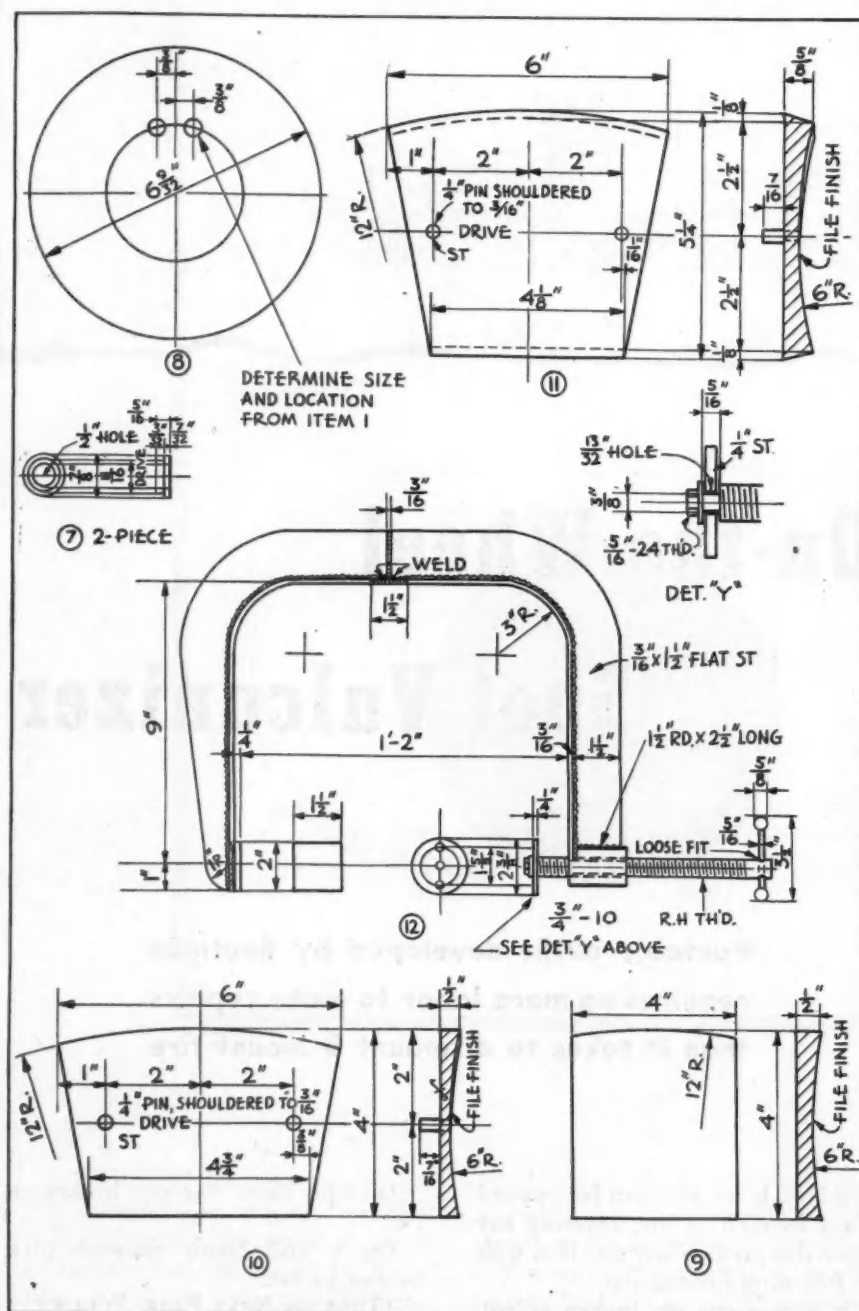
On 6-ply tires—two plys broken or cut.
On 8 and 10-ply tires—4 plys broken or cut.
(TURN TO NEXT PAGE, PLEASE)

On-The-Wheel Spot Vulcanizer

CONTINUED FROM P. 39



Above—Hot plate with clamp attached and two contact plates. The only other equipment necessary to complete a job is an electric drill and rotary files. Below—Additional sketches of design details of the on-the-wheel-spot-vulcanizer.



Method of making a tire repair is as follows:

Remove all loose dirt and foreign matter in and around injury.

Cut away all loose rubber and fabric with knife.

Cut sides of hole to approximately 45 deg. with surface of tire.

Roughen surface of cut with rotary file.

Set tire pressure at 40 pounds (all sizes).

Cover entire surface of hole with rubber cement, and allow approximately 5 minutes drying time, or until cement is no longer fluid.

Fill hole with rubber stripping stock (1/16-in. thick) level with surface of tire.

After the vulcanizer has been allowed to heat up to operating temperatures (15 min.) clamp in place over stripping stock, using contact plate on side wall, and plate only on tread.

Allow 12 min. heating time for each 1/16 in. in depth of stripping stock used.

Remove vulcanizer, and repair is complete.

Tread design may be cut in repairs of large area.

Tube repairs may also be made as follows:

Small Holes—Roughen tube around hole with wire brush or coarse sandpaper. Cover with cement and let dry 5 min. Place small patch of stripping stock over hole, and apply vulcanizer, allowing 10 min. heating time.

Larger Holes and Tears—Roughen outside and inside of tube by folding edges of tear back. Apply cement and stripping stock to inside leaving cloth back in place, and proceed as for small holes, allowing 20 min. heating time.

The clamp can be removed from the hot plate, the plate set face up on bench using a wooden block, hollowed to receive the attachment projections, and a small "C" clamp used to apply pressure on tube.

The repair process described is simple, and requires very little training for proficiency. The labor required to make most repairs of which it is capable, is usually less than that required to dismount and remount tire.



ONE of the characteristics of synthetic rubber is that it tears more easily than natural rubber. For this reason certain precautions are demanded of fleet operators when all-synthetic tubes and flaps are assembled in a tire and mounted on the rim.

In assembling, customary care must be taken to assure proper centering and to avoid folds and creases. But in addition to this it is essential to good performance that the synthetic rubber tube and flap be mounted in such a way that no tension is exerted on them during service. This calls for:

1. Thorough lubrication of the tube, flap and tire before the assembly is mounted on the rim, and

2. A routine of inflating, deflating and re-inflating.

The best lubricants for this purpose are talc, soapstone, mica and vegetable oil soft-soap paste.

When one of the first three materials is used it should be spread liberally on both sides of the flap, on the rim-side of the tube and inside the casing above the toe of the bead.

When the soft-soap paste is used, both surfaces of the flap only need be coated—thoroughly but lightly.

A liquid soap solution should not be used as a lubricant.

In assembling the tube only enough air should be put in it to round it out. When it is in the tire, lubricant should be applied to the rim side of the tube and to the inside of the tire beads. Then the flap, lubricated on both sides, is put in and the tire is mounted on the rim.

When the wheel is properly centered the tube should be inflated just enough to seat the tire beads on the rim. Then the tube should be deflated and, finally, re-inflated to the recommended pressure.

The sketches on this page illustrate the advantages of lubrication in the case of synthetic rubber truck tubes with flaps and passenger car synthetic tubes without flaps.

Synthetic Flaps and Tubes Need 'Lubes'

Application of easily procured lubricants and an inflate-deflate-reinflate routine required to get best service



Sketch at left shows synthetic flap in place and tube inflated enough to round it out. If flap, tube and insides of tire beads have been lubricated the flap and tube will move into correct position without strain or distortion when air pressure is applied, as shown

in center sketch. If not lubricated (right), chances are the edges of the flap will be sealed against the tire wall and the portion along the rim will be thinly stretched, will split and tear in service. This in turn, will pinch the tube and cause a premature failure.



Sketch at left shows passenger car synthetic tube in tire on rim with enough air to round it out. If properly lubricated, the tube under pressure will stretch evenly all around, as shown in

center sketch. If not, the stretch under pressure will be concentrated in the lower portion, as shown in the sketch at right, resulting in probable tearing or splitting of the synthetic tube.

Cooling System

RUST & SCALE

The problem of a fleet operator prompts an answer and some suggestions that are timely for coming warm weather operation

The ANSWER

by E. H. KELLER

Chemical Division, E. I. duPont de Nemours & Co.

WE suggest that Mr. Petro try using additional quantities of acid cleaner for a longer period of time to remove the scale and rust from the cooling system. Excellent results have been reported to us from the field by doubling the cleaning time and the recommended quantity of cooling system cleanser.

It is important to keep the liquid as hot as possible without boiling or loss. We find the temperature can be maintained between 190 and 200 deg. Fahr. without difficulty by covering the radiator with cardboard or cloth.

Mr. Petro's practice of inspecting and flushing the cooling system twice a year is a good one and he undoubtedly uses an antifreeze containing a corrosion inhibitor during the winter. However, we feel it is equally important to add an inhibitor during the summer to prevent corrosion by water. If any oil or grease were present in the cooling system the rust so formed would be coated on the metal surfaces and eventually plug the radiator.

Sections of the pamphlet on cooling system maintenance issued last year by the Office of Defense Transportation discuss my suggestions in greater detail.

SAE Maintenance Committee Recommendations to ODT

The main source of cooling system rust is the engine water jacket, where



The QUESTION...

by E. J. PETRO, Sr.

Fleet Superintendent, Muncie Malleable Foundry Co., Muncie, Ind.

I, as well as many other service men, generally are experiencing a condition caused by the formation of a hard scale, dark brown in color, in the top tank of our radiators.

This accumulation seems to come from the use of both kinds of anti-freeze solutions, namely alcohol and theylene glycol, and is more noticeable after the solution has been permitted to get low enough to cause steam.

Our cooling systems are drained and flushed twice yearly, but after a unit is three years old or older and is permitted to steam, the accumulated scale falls over

and down into the radiator passages on the inside, stopping circulation and making it necessary to remove the radiator and top tank and rod the core. All this is very costly and damaging to thermostats and sometimes to heat indicators and engines.

I have tried many kinds of cleaning solutions, as well as some types of acid, and none seem to even faze it. I would appreciate any assistance you may have to offer to either eliminate the scale or dissolve it. Our local radiator man says that as yet he knows of nothing that will work on it.

the rust is formed on the iron surfaces. Liquid circulation keeps loosening the rust as it forms and the larger rust scales usually settle in the water jacket. However, the finer particles are carried over into the radiator where they become attached to the inside walls of the water tubes and tanks in the form of a hard, adherent scale.

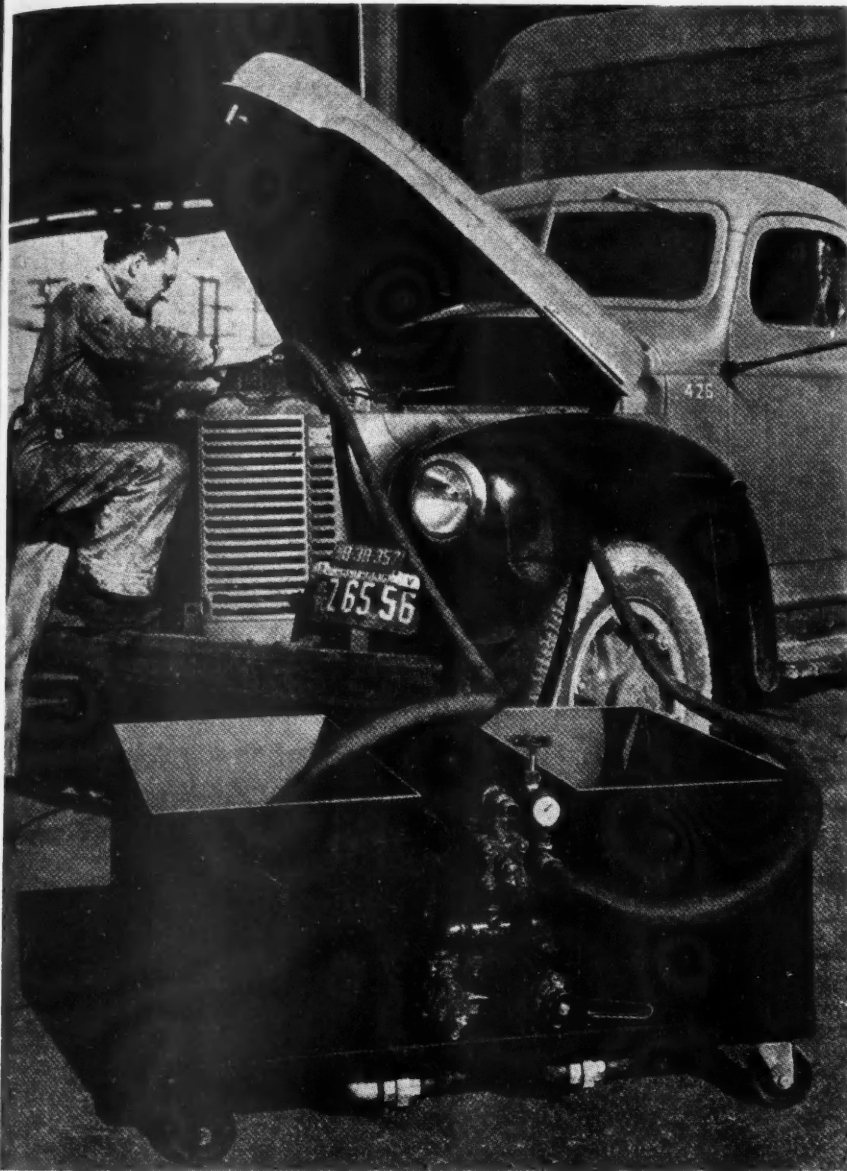
A year or more is usually required for the rust layer in the radiator tubes to become thick enough to seriously restrict circulation, but in the meantime the scale accumulations continue to reduce the cooling efficiency of the radiator until the engine finally overheats. Resultant boil-

ing stirs up the rust deposits which have been growing in the water jacket and circulation carries large quantities over into the radiator. After boiling starts, only a short period of operation is needed to load the radiator tubes and practically stop circulation. Then further driving is out of the question until both the radiator and engine block receive corrective cleaning service.

Prevention of Water Scale

The following preventive service methods are suggested to minimize water-scale formation:

1. Avoid excessively hard water wherever possible. Use soft or rain



The main source of cooling system rust is in the engine water jacket where rust is formed on the iron surfaces. Preventive service outlined in the article will insure maximum cooling efficiency. Illustrated is an automatic radiator and block flusher, described in detail in the New Products section

water whenever conveniently available. Water softening equipment has been used in some localities.

2. Periodic preventive cleaning of cooling system (see below) to remove rust formations that would cause hot spots and local boiling.

3. Keep water additions down to an absolute minimum by eliminating overfilling and by a preventive maintenance program that will keep leakage and overflow losses down to a minimum.

4. Always use a corrosion inhibitor with water.

Preventive Cleaning

A suitable cooling system cleaner

must be capable of removing adherent scale by dissolving action. Oxalic-acid and sodium-bisulphate types of cleaners have been found satisfactory in this respect and are specified by the U. S. Army. An acid cleaner should preferably be inhibited to reduce cooling system corrosion to the minimum consistent with effective cleaning. The preventive cleaning procedure is as follows:

1. Completely drain the system, put in the recommended amount of acid cleaner and fill with fresh water. With the radiator covered, run the engine at least 30 min. with the solution hot (at least 180 deg. Fahr. but below boiling). Stop engine and

LET US HELP YOU!

Question and Answer Service

If you have a fleet maintenance problem that bothers you, let us have the details and we will try to get the answers that will solve it. We will go to all available sources for the answers—including other fleet operators. Here is your chance to get your problem before thousands of other fleetmen and get the benefit of their experience.

Address your problem to
The Editor, Commercial Car
Journal, 56th & Chestnut Sts.,
Philadelphia 39, Pa.

after a few minutes thoroughly drain the system. (Because of the danger of overflow loss from foaming, do not drive the vehicle with cleaning solution in the system.)

2. Pour the recommended amount of neutralizer into the radiator, fill with water and run the engine until warmed up to driving temperature.

3. Flush the radiator and water jacket thoroughly with water to complete the cleaning operation before the vehicle is driven. Run the engine long enough to open the thermostat for complete circulation through the system, then completely drain the water. For the most complete removal of loose rust, pressure flushing with an air-and-water gun is recommended. (Do not leave the neutralizer in the system since it is not a rust inhibitor.)

4. After cleaning and flushing, check the thermostat; also clean out the overflow pipe and lubricate the water pump, if necessary. In sealed cooling systems be sure that the valves in the radiator cap are free from sediment and properly seated.

Corrective Cleaning

For cleaning clogged systems follow the preventive cleaning procedure above, but increase the quantity (TURN TO PAGE 134, PLEASE)



Commercial Car Journal will pay \$5.00 for acceptable shop hints and \$5.00 for unusual parts salvage tips.

Send in as many ideas as you have to the editor. Don't underestimate your ideas. Let the editor be the judge. A photograph or a rough sketch and simple explanation in your own words are enough. CCJ will polish them up for publication. Use this opportunity to earn extra money to buy more War Bonds to "Back the Attack."

SHOP &

1. Rocker Arm Lubrication Aid

by M. O. Swenson
Northern States Power Co.,
Grand Fork, N. D.

I solved the problem of lubricating Chevrolet rocker arms by using a piece of ordinary weather stripping felt. It is about 1/16 in. thick, 3/4 in. wide, and I used a piece 36 in. long.

It is only necessary to lay it on top of the rocker arms and tuck the two ends under the two outside rocker arms. By capillary attraction, the oil works its way up to all rocker arms, keeping them lubricated and quiet in operation.

2. Starter Switch Repair

by Albert L. Hendrickson
Sherwin Williams Co.,
Ordill, Ill.

We have had some trouble with Ford and White starter switches. One day I took a junked switch, cut it apart and found the reason why they were failing—the contact plunger and the electromagnet had corroded and could not work freely; this was caused by moisture entering the switch through the air hole or the terminal connections. The following repair has proved very successful:



He's a rare mechanic who never has doped out some short cuts and time-saving ideas. Make money on yours. Ideas that paid off this month are:

1. Rocker Arm Lubrication Aid by M. O. Swenson

2. Starter Switch Repair by Albert L. Hendrickson

3. Salvaging Clutch Bearings by Frank E. Seftcheck

4. Oil Cartridge Removal by Charles Smith

5. Valve Key Catcher by Preston R. Coleman



1. Drill 3/16-in. hole through the top of the switch, as shown in the drawing.

2. Blow graphite powder into the hole.

3. Take a nail, or something similar, insert it into the hole and work plunger up and down until it works freely.

4. Take the switch in one hand, and strike it against the palm of the other hand to knock out excess graphite.

5. Solder the hole.

The above is not much of a job but the results certainly are worth the time and effort and aid any fleet's parts conservation program.

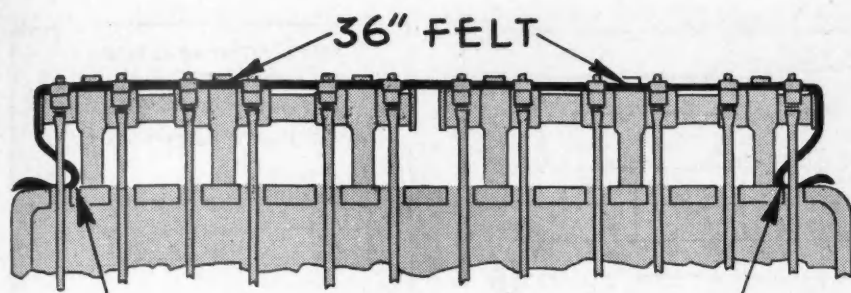
3. Salvaging Clutch Bearings

by Frank E. Seftcheck
Swift & Co., Brooklyn, N. Y.

When Chevrolet clutch bearings became noisy, the usual procedure was to replace them. Today, because it is difficult to get bearings, we put them through this salvage process.

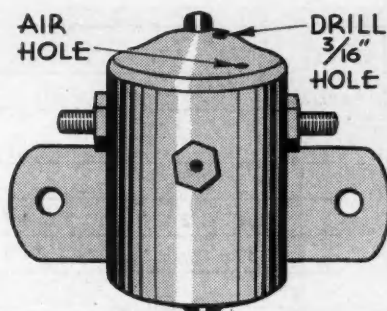
We wash the bearing thoroughly. Then, with a small, sharp chisel, we cut the lip in two places halfway on the retainer. Carefully forcing the retainer off the bearing, we take an ice pick and lift the ball spacer. Then, forcing the bearing balls together, we lift the bearing apart.

Now we wash all parts thoroughly and inspect for wear. If bearing is found usable, we proceed to reassemble. We repack the bearing with a high temperature magneto grease, although a good grade of wheel bearing grease can be used as well. Now we force the retainer on the bearing and place it in a vise to peen the lip



TUCK END OF FELT UNDER
END ROCKER ARM

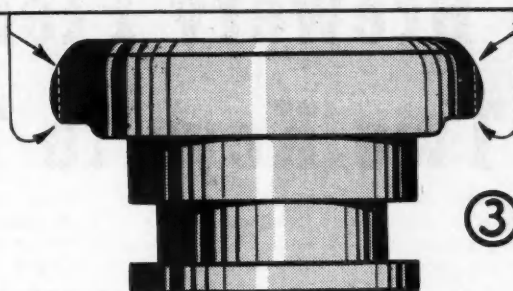
①



STARTER SWITCH

②

WITH CHISEL CUT LIP ON
EACH SIDE OF BEARING



CLUTCH RELEASE BEARING

③

SALVAGE HINTS

over with a small hammer, which completes the job.

We use this method every time we do a clutch job.

4. Oil Cartridge Removal

by Charles Smith

Otto's Suburban Dairy,
Camp Horne Road, Pittsburgh, Pa.

Inasmuch as quite a number of our trucks are equipped with DeLuxe oil filters, I have tried many ways of simplifying and expediting the job of removing cartridges. So far I find the following method the simplest:

Remove the top of the filter and the $\frac{1}{4}$ -in. pipe fitting, A, at the bottom. In its place insert the "valve plug," B, shown in the accompanying sketch.

The valve plug is a home-made device made as follows: Simply take a $\frac{1}{4}$ to $\frac{1}{8}$ -in. pipe bushing and insert a tire valve.

Now, to remove an old filter cartridge, just apply an air hose to the valve and the cartridge will pop up. In most cases it only will require a momentary "touch" of the air line to get results; if the cartridge has been in service for some time, a little more pressure will be required. In any

case, it takes but a moment to remove the cartridge. It never fails.

5. Valve Key Catcher

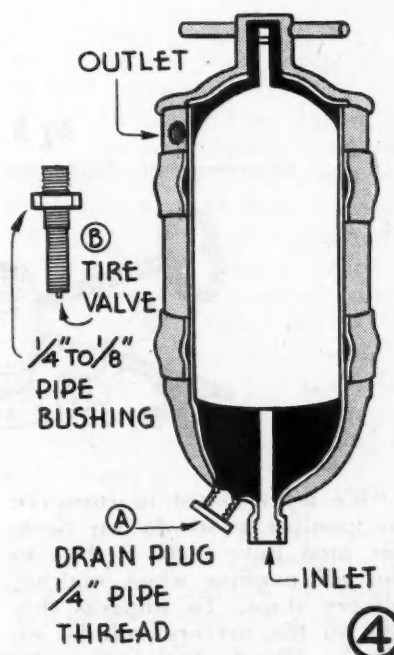
by Preston R. Coleman

Rainey Wood Coke Co., Swedeland, Pa.

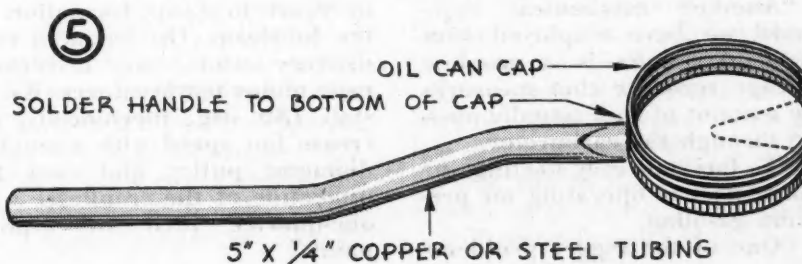
Working in a tight spot recently, I needed a valve key catcher but couldn't get one. I made one that my fellow mechanics like better than those we once were able to buy.

I used a large oil can cap to which I soldered a 5-in. piece of $\frac{1}{4}$ -in. copper tubing for a handle, as shown in the sketch. For passenger cars, bottle caps, such as come on soda water and ginger ale bottles, can be used.

The dotted line in the drawing suggests an optional feature. For some makes of engines a V notch could be cut into the cap for better accessibility.



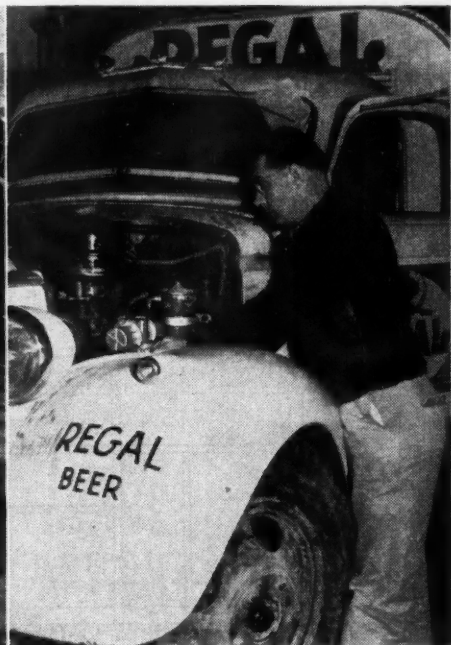
④



⑤



Even though the area available for service at American Brewing Co.'s main garage is small—50x75 ft.—the space is efficiently utilized. Above, at left,



mechanic is shown operating a small lathe with a gear cutting attachment. Center. Author installing a gasoline consumption recording device. Right,



Branding tires to establish unquestioned ownership. Below. One of three truck trailers used by American Brewing Co. for delivery to branches.



Main plant production is distributed throughout Louisiana, in Mississippi and northwest Florida. Retailers in what may be termed metropolitan New Orleans are served directly from our local warehouse. Deliveries elsewhere in the territory named are handled by 12 branches that combine warehouse and garage facilities. Two of these branches—those at Lake Charles, La., and Pensacola, Fla.—also have washing, greasing and tire inflation apparatus.

Our fleet now consists of 16 passenger cars of various makes, used for business purposes by salesmen and company executives, and 150 trucks, including three highway transport jobs. While the product of six manufacturers is represented in our truck fleet, well over 90 per cent of our delivery units are of two

makes, and are of 1½-ton rated capacity. Incidentally, 26 trucks of one manufacture are of 1933 vintage.

Before gasoline and tire rationing went into effect, our fleet rolled upwards of three million miles per year. By various means, we have cut our former mileage by over 60 per cent. In addition to the curtailment of our local delivery schedules, as suggested by ODT—the elimination of special deliveries, call-backs and the like—we have managed important mileage savings in the handling of our plant to branch shipments.

Whereas, we used to make all deliveries to our distribution branches with our own automotive equipment, we now ship to points outside a 100-mile radius from New Orleans by public carrier—rail or motor freight. Our branches inside the 100-mile

limit send their trucks to the plant for their allotment.

Since the route from branch to brewery generally passes through at least a part of the former's distribution territory, these trucks can service some of the branch customers on return trips. Thus, we effect a mileage-saving by having branch trucks come in for their beer.

As above stated, keeping our delivery units supplied with tires is for us a serious matter. The rationing of this highly necessary item caught us with a small inventory.

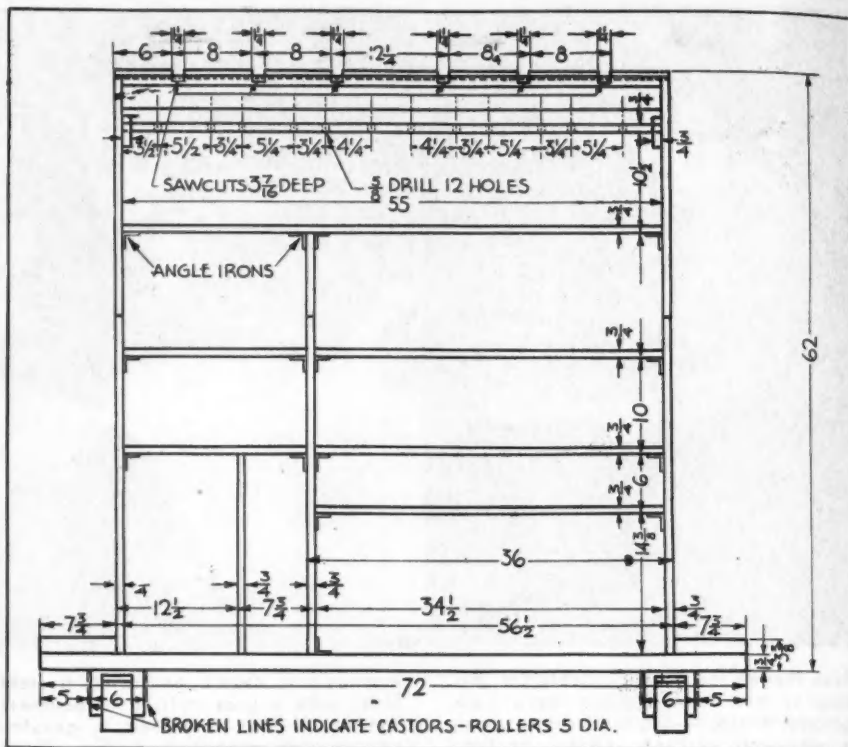
We do not have what we consider proper facilities for storing a large quantity of tires. Therefore, while we were in the habit of anticipating our needs by placing orders with dealers, we actually kept in our physical possession only a limited tire stock. Consequently, when rationing hit us, we at once set about conserving what tires we had.

In our favor was the fact that we made it a practice to buy only first-line tires and tubes. We did no recapping, and we did not consider it a long range economy to run our
(TURN TO PAGE 97, PLEASE)

Fig. 1. Drawing at right, including adjoining portion on next page, shows construction details of unique time- and labor-saving engine parts rack

Maintenance shops throughout the truck industry know only too well the effects of the manpower shortage and are devising all sorts of time and labor savers to compensate for it.

The Philadelphia branch of the White Co. has been extremely resourceful in this respect. Using scrap materials and experience it has designed and built a group of unusual pieces of shop equipment. Illustrations and detailed drawings are given in this article for an Engine Parts Rack, Cylinder Boring Rack, Engine Block Dolly, Axle Dolly, Differential Stand, Rear Axle Stand, Transmission Stand, and "A" Frame Hoist.



Special Home-Made Shop Equipment Speeds Service

Job time is reduced, efficiency improved and production increased as various stands, racks and dollies are developed to meet increased wartime maintenance requirements

by A. W. GREENE

Assistant Editor, Commercial Car Journal

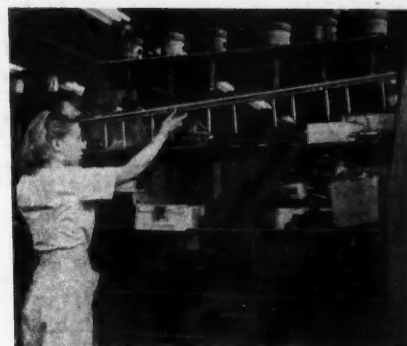
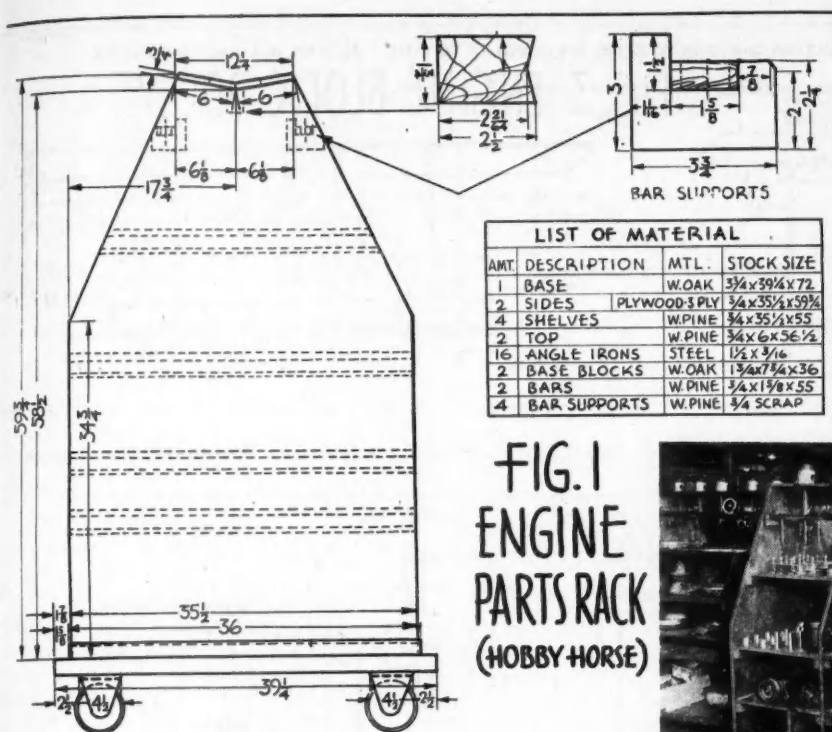
TO KEEP trucks rolling in the face of manpower shortages, a great deal of brainwork is being expended on ways of improving service shop efficiency by means of labor-saving and time-saving devices.

Nowhere is this more evident than in the nation-wide branch and dealer set-up of The White Motor Co. which, as its contribution to the important task of keeping trucks on the road doing their jobs, is concentrating on truck maintenance as never before in its history.

Typical of the efforts being made to expedite shop work, and at the same time improving its quality, are

the time and labor-saving devices developed by the White company and in use in its Philadelphia branch. These devices consist of various stands, racks and dollies designed to organize, facilitate and expedite specific major repair jobs.

There's a portable rack, Fig. 1, for example, designed to carry all parts of a disassembled engine, that reduces the job of rebuilding an engine to factory efficiency. An inexpensive 12-ft. cylinder boring rack, Fig. 2, that holds several engine blocks, han-

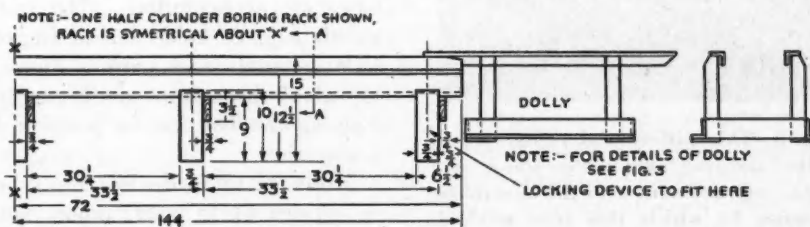
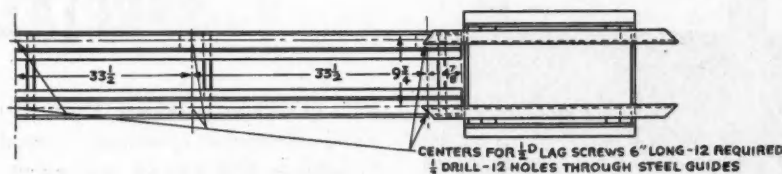
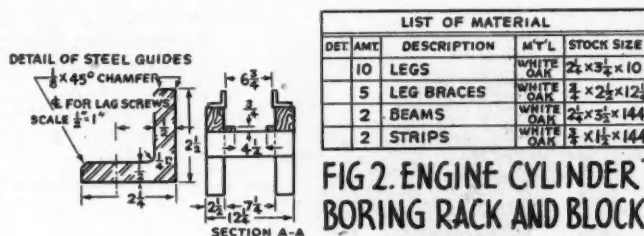
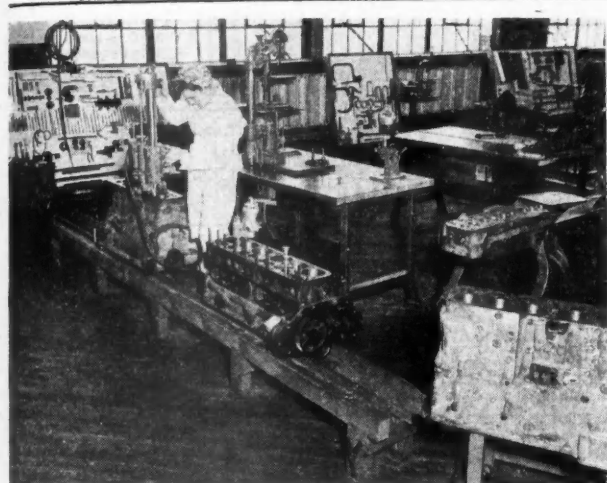


Removable rack on hobby horse facilitates valve handling. Valves hang below their respective piston assemblies



The engine parts rack—hobby horse—holds all engine parts and accessories ready for assembly. Block stands on dolly

Fig. 2. This cylinder boring rack closely approximates production line efficiency. Construction details are shown below



dles block repairs with production line ease and simplicity. Specially constructed dollies, Fig. 3, of the same height, bring and remove blocks at either end of the rack.

An inexpensively built portable axle rack, Fig. 4, enables one man to move a heavy axle wherever required, without strain, without special hoists and without a helper. There are two specially designed rear axle assembly stands that cut time and simplify rear axle rebuilding. One of these stands, Fig. 5, known as the rear axle center stand, is designed to hold the differential housing in the most convenient

(TURN TO PAGE 50, PLEASE)

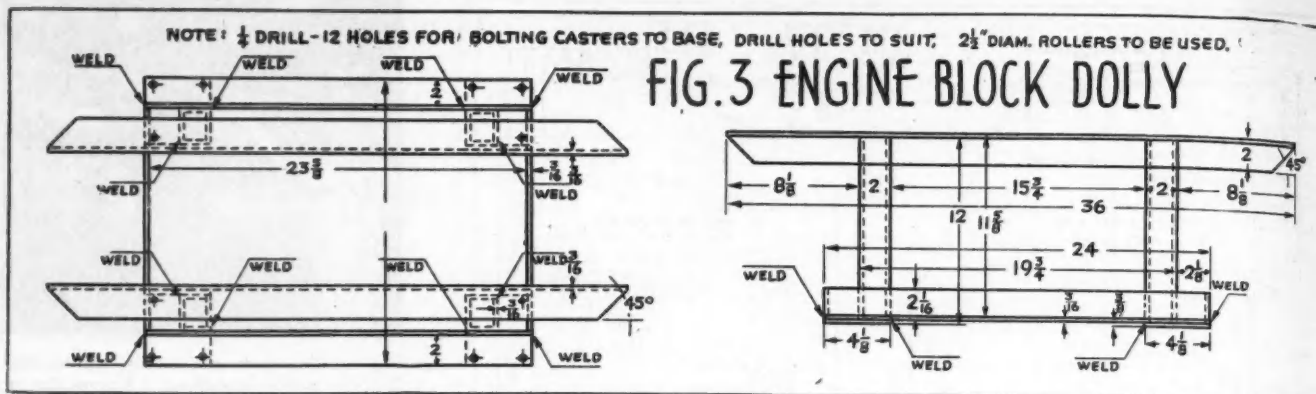


Fig. 3. Construction details of the engine block dolly. Its use, explained in the text, is shown in the photographic illustration.

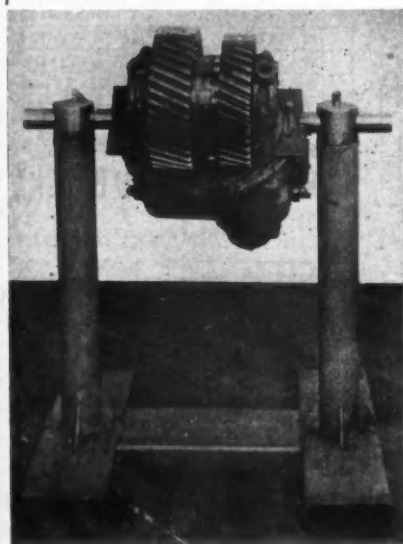
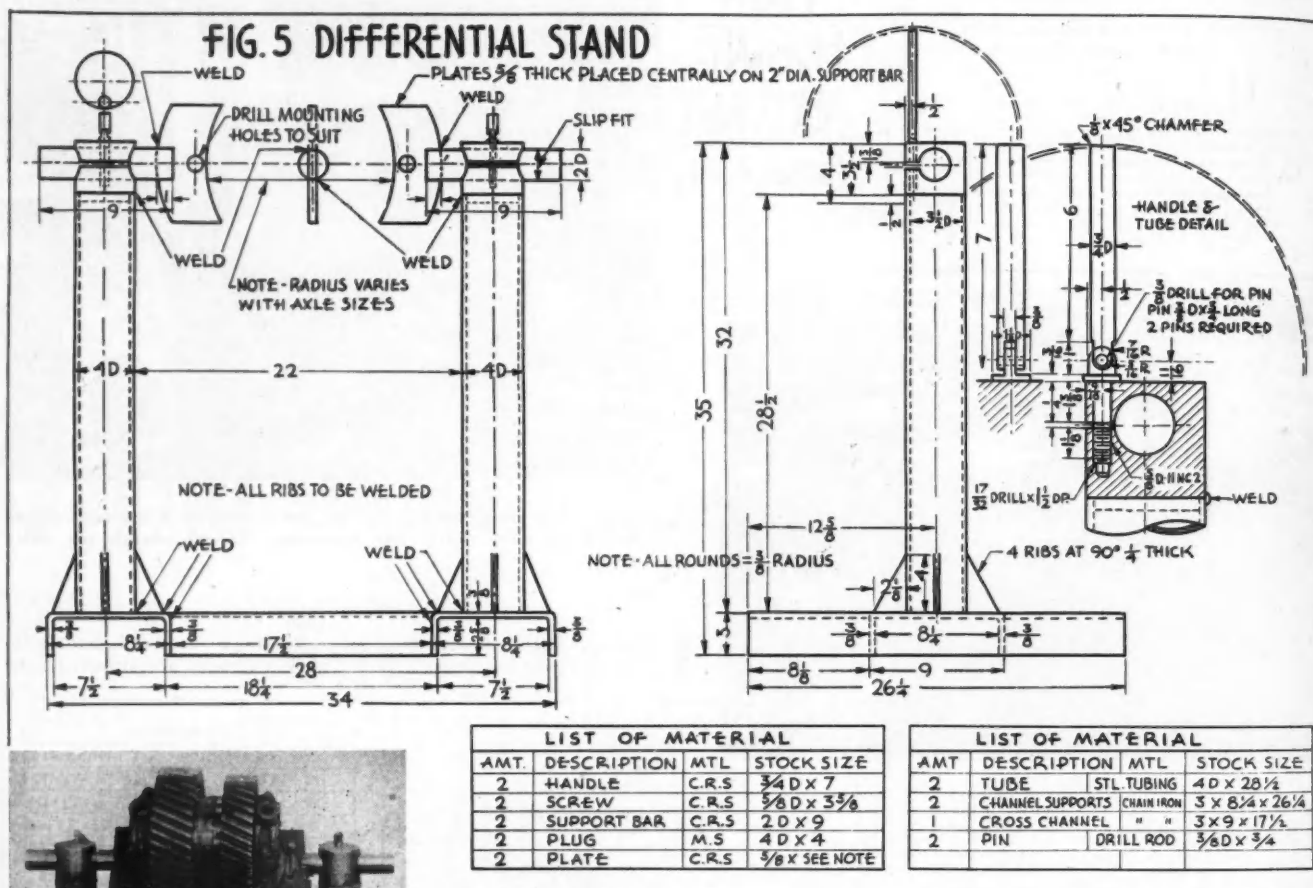


Fig. 5. This differential repair stand, called the rear axle center stand, is a great improvement over the customary manner in which this type work is handled. Above. Construction details

SPECIAL HOME-MADE SHOP

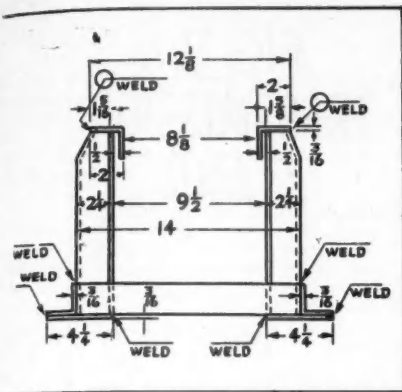
(CONTINUED FROM PAGE 49)
and accessible position, permitting complete freedom of movement and ease of accessibility. The other stand, Fig. 6, holds the entire rear axle assembly and permits easy removal of the axles and differentials, keeping the housing in position for reassembly.

Many of these devices have been in service for a year, others for a shorter period but all have definitely

proved their value in enabling the mechanics to do more and better work in a shorter time. Construction details of these unique shop devices and their function in White's accelerated wartime truck maintenance can be determined from the following data and accompanying illustrations.

The Hobby Horse

Shown in Fig. 1 is the portable rack, affectionately called the hobby



tions that accompany Figs. 1 and 2

NOTE.
2 1/4 O.D. STEEL USED
THROUGHOUT
TRAYS ARE 2 INCHES DEEP
AND 9 INCHES WIDE, CON-
STRUCTED OF 1/16 SHEET METAL
HOOKS ARE 2 INCHES WIDE
WELD ALL JOINTS

FIG. 6 REAR
AXLE STAND

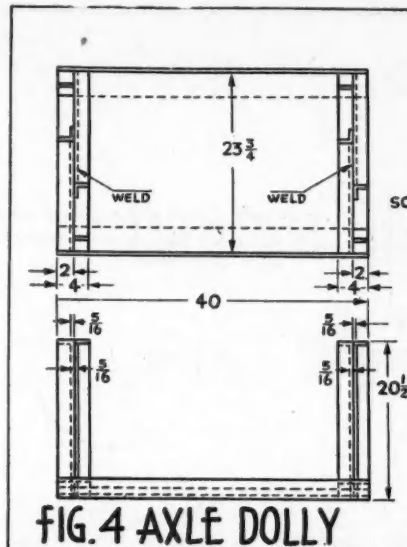
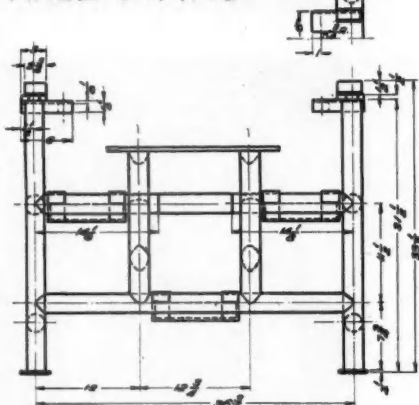


Fig. 4. Construction details of White's axle rack. This simple and inexpensive piece of home-made shop equipment greatly expedites and facilitates axle handling

LIST OF MATERIAL			
DET.	AMT.	DESCRIPTION	M'T'L STOCK SIZE
1		BOARD SHELF	WHITE PINE 3/4 X 25 1/2 X 32
		BODY & UPRIGHTS-SEE NOTE	

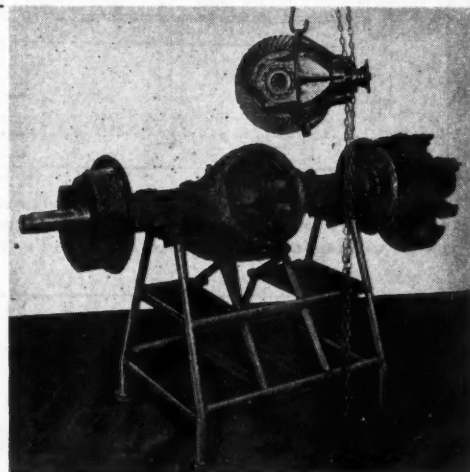
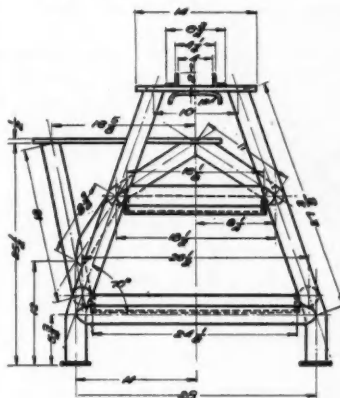
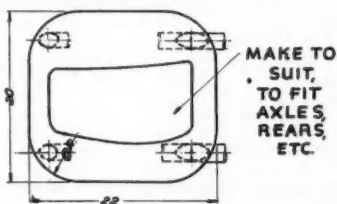
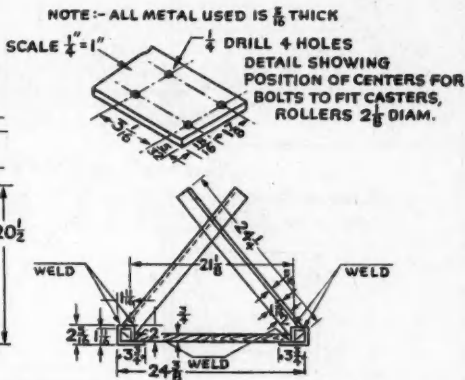


Fig. 6. This unique rear axle stand provides firm support and permits complete freedom of movement for the mechanic. Left. Design details.

EQUIPMENT SPEEDS SERVICE

horse, designed to facilitate and expedite engine rebuilding. It is 68 in. high, 39 3/4 in. wide, 72 in. long and made of 3/4 in. resin-bonded plywood. It is so constructed that it holds all parts of an engine, except the block, and in approximately the same position as in an actual engine. Complete piston assemblies hang at the top; nearby is a removable rack containing all the valves, with the intakes and exhausts in their proper

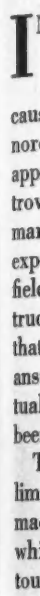
order, and below, on the various shelves, are the valve guides, valve springs, camshafts, manifolds, fan assembly, water pump, etc. The crankshaft is placed horizontally on an extension of the base, but it is planned to provide supports to stand it vertically to facilitate handling and transportation.

The hobby horse's use starts with the disassembly of an engine. All parts, after cleaning, are placed in

their respective positions and rolled over to the inspection department, where they are examined carefully. Up to the present, it has been common practice to collect all such parts in pans or boxes, or spread them out on a work bench. Little or no order was possible, and many usable parts were scratched or damaged by contact with each other. Moreover, to collect all valves, for example, many other parts had to be handled, reducing the inspector's production time. The hobby horse eliminates this disorder and confusion, enabling the inspector to locate instantly any part desired. Then when checking the condition of valve heads, the in-

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Each hobby horse is identified by number, customer's name and the engine number. A work order, made out by the inspector and attached to each hobby horse, specifies which parts are to be replaced and which

(TURN TO PAGE 123, PLEASE)

Editor's Note—The author, formerly chief transportation engineer of the International Harvester Co., and now a War Production Board automotive engineering consultant, wants it understood that the following comments are entirely personal and do not necessarily reflect the opinions of any private business or governmental agency. The comments are taken from a more detailed discussion presented at a meeting of the Metropolitan Section of the Society of Automotive Engineers.

Design Details for Post-War Trucks

A transportation engineer, basing his views on years of experience and contact with users, makes known his wants

by FRED B. LAUTZENHISER

IN the following discussion I have confined myself to the basic or fundamental requirements, because these are too frequently ignored in favor of the more romantic appeal of highly technical and controversial subjects. I have used primarily as my basis, many years of experience and observation in the field, in direct contrast with many truck users. It frequently develops that "what the user wants" is not the answer to "what his operation actually requires." This phase has been considered.

There will always be a more or less limited field for the 100% "tailor made," highly specialized vehicle, which no attempt has been made to touch upon in this brief discussion.

One important phase that can appear but superficially in a study of this brevity is that of "feature" or "talking point design." Units and their coordination definitely can be designed to introduce talking points for the salesman, although in many cases they may not particularly add to nor otherwise affect the structural strength or performance of the unit.

Here is what the transportation engineer wants in post-war trucks:

FRAMES

Standard S.A.E. Cab to Axle (CA) dimensions throughout.

Standard S.A.E. frame widths throughout.

Stock thickness, $\frac{1}{4}$ inch to begin, 10,000 gross unit increasing proportionately with gross vehicle weight increases.

Straight frame side rails (not tapered), in all units beginning with 20,000 lb. gross. I have personally canvassed a number of heavy-duty truck operators and they (not salesmen) stated that the matter of a few inches greater loading height was of no great importance. It is, however, of considerable importance with heavy-duty units, to be able to provide wheelbases to suit the particular jobs and to provide the necessary rear-end length without necessity of

cutting and splicing at high cost and which frequently is not permissible. As a general rule, with some exceptions, of course, loading of heavy units from 20,000 gross upward, is accomplished from loading platforms and by power shovels; therefore, platform height is rather immaterial. The straight side rail permits of factory stocking in a minimum of lengths which can be cut for any required wheelbase at far less final cost. Also the heavier end sections of the straight rails provide better support for dump bodies and lend the appearance of far greater strength than do the narrow, tapered-down rails.

ENGINES

Sufficient torque output to provide grade ability of at least 3 per cent at 20 m.p.h. in not more than one transmission reduction below direct; or, put in other words, at least 1 hp. for each 400 lb. of GVW (gross vehicle weight) or GTW (gross train weight) to be powered. This does not necessarily apply to vehicles in the "off highway" category.

At least one engine oversize for each gross vehicle or train weight rating.

Torque output of at least 0.78 lb. ft. per cubic inch of piston displacement.

Torque curve flat from 1000 to 2000 r.p.m.

Removable cylinder sleeves.

Counterbalanced crankshafts.

Crankcase ventilation.

Oil cooling system.

Diesel and liquefied gas power-plant installations for the heavier units.

CLUTCHES

At least the same frictional area as competition—more is desirable. (And put long life in linings by all means!)

Torque converters for the extremely heavy vehicles.

TRANSMISSION

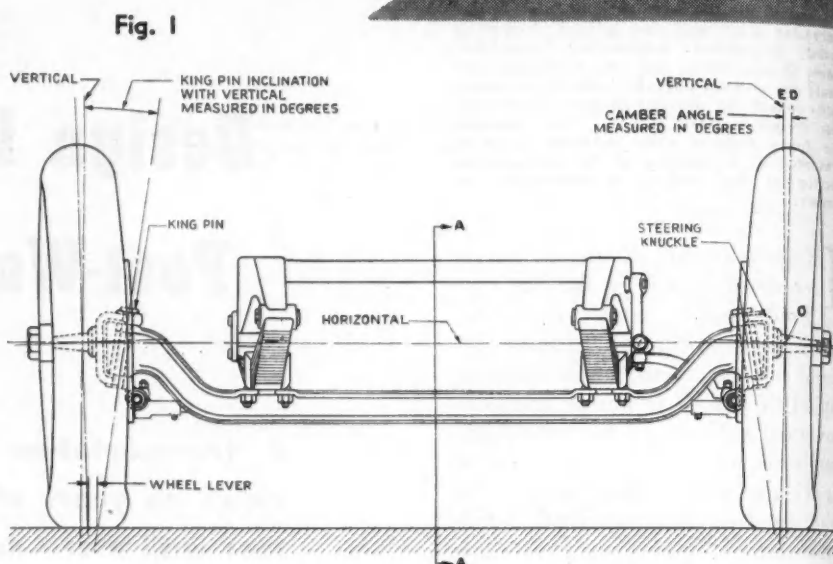
(In the following, reference to "gross" means either GVW or GTW.)

Vehicles up to and including 10,000 lb. gross—4-speed.

Vehicles 12,000 to 18,000 lb. gross inclusive—5-speed, direct in 5th; also 5-speed overdrive in 5th, optional at no extra cost. But by all means the sequence of progressions in each should be uniformly spaced.

Units 20,000 to 27,000 gross inclusive—6-speed with overdrive 6th and uniformly progressive.

Units 28,000 upward—8-speed
(TURN TO PAGE 136, PLEASE)



FRONT-END Maintenance

SAE-ODT report provides trouble-shooting guide and PM procedure to detect and

THE first requisite of good front-end maintenance is the ability to recognize the cause of steering complaints and the items that should be checked after receiving such complaints. The following list covers the more common troubles and items to be checked:

A. Hard steering—

1. Tire pressure
2. Tire and wheel assemblies for balance
3. Lubrication of tie rod, drag link ends and kingpin bushings
4. Axle caster
5. Steering gear adjustments
6. Front springs (sagged or broken)
7. For bent axle
8. Load carried and load distribution

B. Looseness in steering system

1. Front wheel bearings
2. Steering knuckle bearings

3. Tie rod and drag link ends and all other linkage
4. Steering gear adjustments
5. Rims and backing plates for looseness
6. Steering gear mounting (frame and dash)
7. Spring shackles and spring U bolts

C. Wandering—

1. Tire pressure
2. Axle caster
3. Front wheel toe-in
4. Steering linkage for adjustment and lubrication
5. Steering gear adjustment for tightness in mid-position
6. Steering box mounting
7. Spring center bolt and spring U-bolts
8. Load carried and load distribution

D. Shimmy and wheel tramp—

1. Tire pressure
2. Tire and wheel assemblies for balance
3. Correct sizes and weights of tires

4. Loose linkage or king-pin bushings
5. Shock absorbers
6. Axle caster
7. Front springs (sagged or broken)
8. Load carried and load distribution

E. Wheels leading to one side or truck pulling to one side—

1. Tire pressure
2. Correct sizes and weights of tires
3. Wheel bearing adjustment
4. Front and rear springs, center bolt and U bolts
5. For dragging brake
6. For bent axle (or unequal caster)
7. For bent frame

F. Erratic steering on brake application—

1. Tire pressure
2. Axle caster
3. Brake adjustment
4. Brake lining for grease
5. Brake drums out-of-round
6. Drum distortion under brake application

Fig. 2

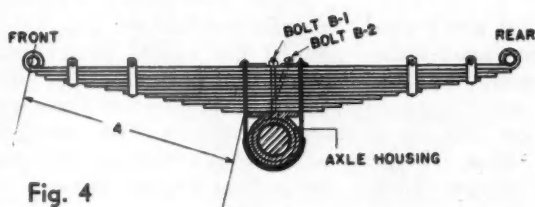
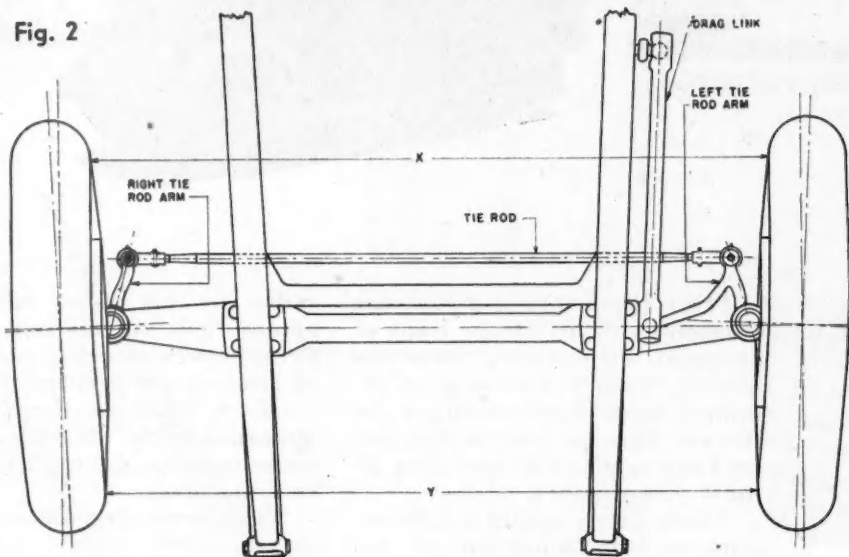
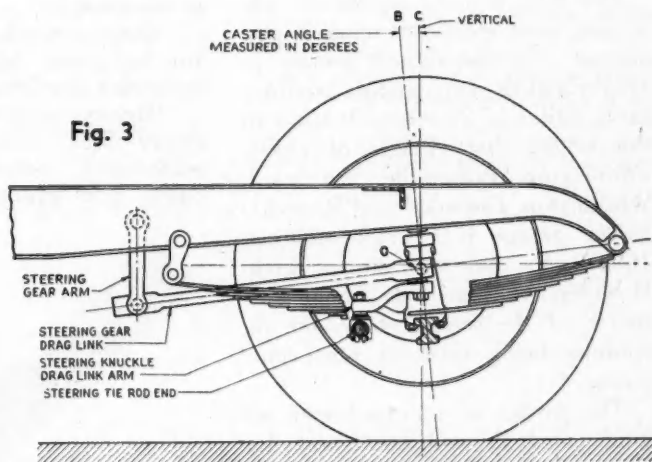


Fig. 4

CASTER ANGLE
MEASURED IN DEGREES

Fig. 3



avoid steering complaints

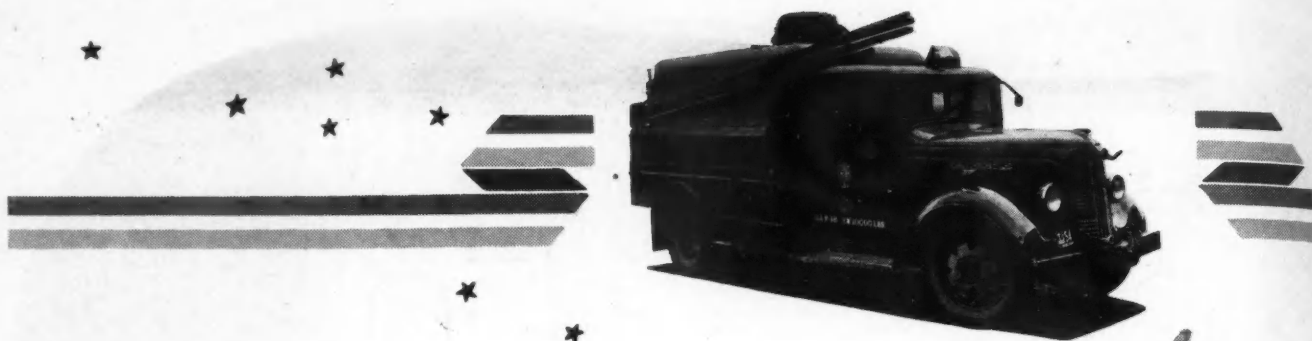
7. Brake anchors and backing plates for excessive wear
8. Front springs, U-bolts and center bolts
9. Steering knuckle
10. Load carried and load distribution

G. Abnormal tire wear—

1. Tire pressure
2. Tire and wheel assemblies for balance
3. For bent tie-rod arms
4. For bent axle
5. For bent wheels
6. Front wheel toe-in
7. Brake adjustment
8. Wheel bearing adjustments
9. Load carried and load distribution

The way to avoid the seven types of complaints listed above is to set up and practice a proper steering mechanism preventive maintenance plan. The necessary steps in such a (TURN TO PAGE 74, PLEASE)

The factors of front-end geometry are caster, camber, toe-in and king-pin inclination or slant. **CASTER** is the backward tilt at the top of the kingpin and is measured in degrees of the angle created between the center line of the kingpin and a line perpendicular to the ground when viewed by facing the side of the front wheel. In Fig. 3 the caster angle is BOC. Caster provides stability of the front axle in forward motion and produces a self-righting effect of the front wheels after turning. **CAMBER** is the outward tilt of the front wheels at the top and is measured in degrees of the angle created by the wheel and a line perpendicular to the ground. On the wheel at right in Fig. 1 the camber angle is EOD. Camber offsets the tendency of wheels to spread outward at the bottom as a result of axle deflection under load. **TOE-IN**: Front wheels of motor vehicles are set closer together in front of the axle than they are in the rear. Toe-in is the measure of difference between these two distances. It is measured in inches at spindle height. In Fig. 2 dimension X minus Y at spindle height equals toe-in. Toe-in is used to offset the tendency of the wheels to spread apart as a consequence of the rolling resistance of the road. Toe-out is the reverse of toe-in and causes poor steering. **KINGPIN SLANT** is the outward tilt of the bottom of the kingpin by virtue of which its projected center line approaches the tire-center contact with the ground. It is measured in degrees of tilt of the kingpin from a vertical position as shown in the wheel at left in Fig. 1. Excessive caster causes hard steering and sometimes shimmy while insufficient caster causes poor directional control and wandering. Excessive camber causes premature tire wear on the outside half of the tread. Excessive toe-in or toe-out causes tire slippage and premature wear.



WHEN I took charge of the garage of the Central Illinois Light Co., Peoria, Ill., in November, 1941, I found the fleet to consist of 106 units from one to six years old. Of these, 24 were heavy units of one ton or more capacity, while the other 82 were passenger cars and light trucks. All of these vehicles still are in service.

The fleet is used exclusively for service work on the company's gas, electric and central heat service in Peoria and the surrounding territory for a radius of 30 miles. It takes in the neighboring villages of Pekin, Farmington, Princeville, Eureka, Washington, Elmwood and Roanoke.

Our garage is a brick building, 150x70 ft. and two stories high. However, we have only about one-fourth of the second story, the remainder being used for other purposes.

The garage is equipped with all kinds of tools and equipment for both light and heavy repairs, including both a pit and a 2-post lift. The shop is in the rear of the building. The remainder of the building is used for storage of vehicles.

For the past seven months we have been getting along with two mechanics and a washer. This is one less mechanic than we had previously but we have managed quite satisfactorily. The garage is open from 7 a. m. to 2 a. m. daily, with the exception of Saturday and Monday, when it closes at 1 a. m. Two of the men work 40 hours a week and the other one 48 hours a week.

We do all of our own mechanical work except bad wrecks. We do our own rebuilding of motors and water pumps and all generator and starter work. We repair tubes in our own shop, but send out recapping and tire repairs. Our mechanics also do all painting.

"Our preventive maintenance program is built on the basis of frequent inspections," says the author, "rather than on more extended inspections at longer intervals. It is because of this that we keep each truck operating almost continuously.

"Each driver makes a daily report on the condition of his truck, whether or not any work is necessary.

"Once a week, tires are tested for inflation. At the same time, batteries are inspected.

"Heavy units are greased every 500 miles or 30 days, whichever comes first. Light units are greased every 1000

miles or 30 days, whichever comes first. At the same time, tires, brakes, steering and clutch clearances are inspected.

"Each 90 days, the 29 units operating in the outlying country come into the garage for a general inspection.

"The remaining units come in every 3000 miles or four months, whichever comes first."

The foregoing constitutes a rough outline of Central-Illinois Light Co.'s PM program. However, that is but half of the story. Read how Verner Pass executes and controls the program to achieve a 6.98-cent cost per mile, including depreciation.

Many Checks

Central Illinois utility's PM program achieves results on the basis of frequent light checks rather than more extensive inspections at longer intervals

by VERNER J. PASS

Fleet Supervisor, Central-Illinois Light Co., Peoria, Ill.

Of course, we were required to cut our truck mileage 40 per cent, the same as all other fleet operators. Despite this cut in mileage, in 1943

our light units traveled a total of 507,398 miles and our heavy units 115,184 miles.

In order to keep this fleet running,

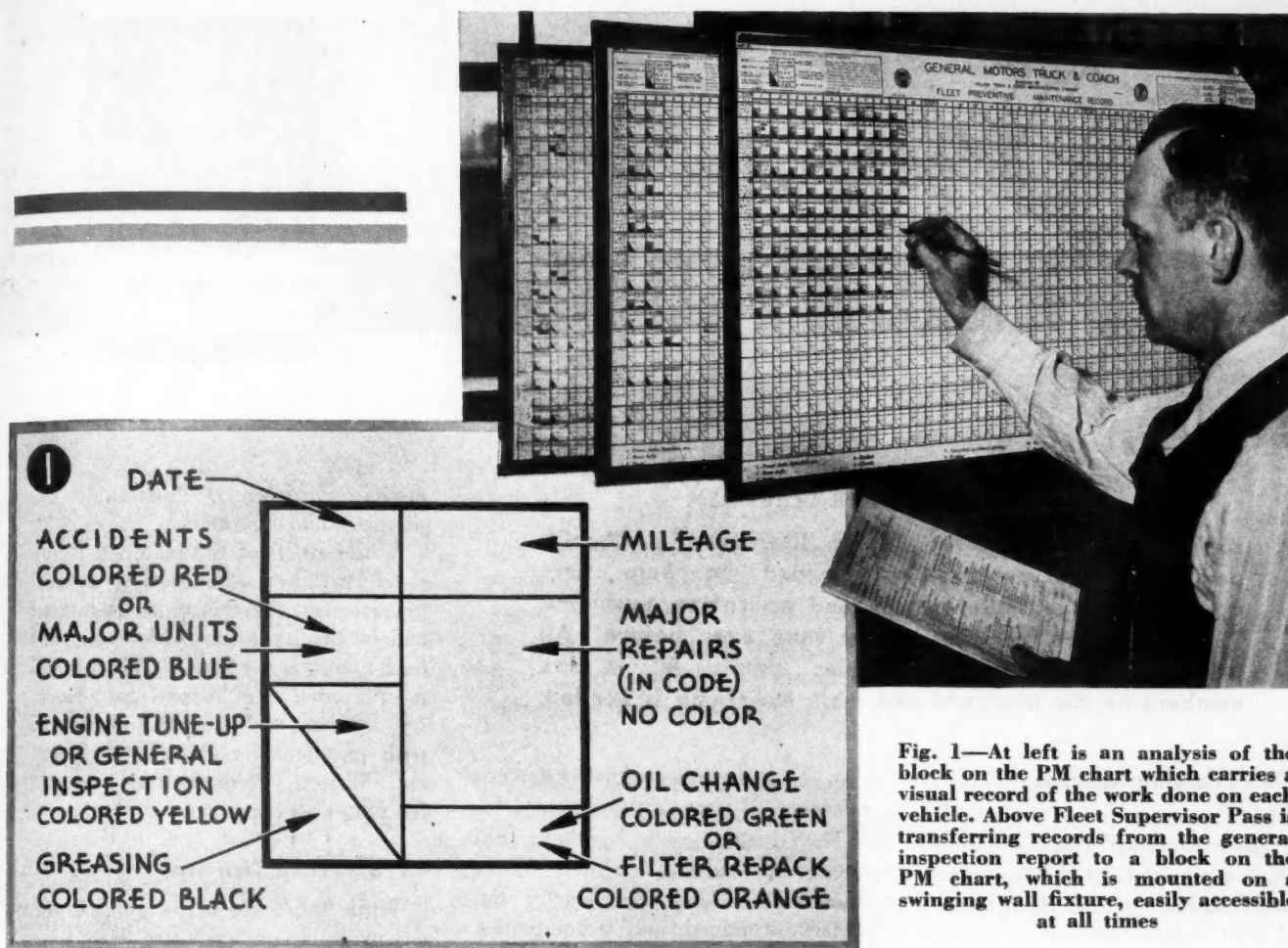


Fig. 1—At left is an analysis of the block on the PM chart which carries a visual record of the work done on each vehicle. Above Fleet Supervisor Pass is transferring records from the general inspection report to a block on the PM chart, which is mounted on a swinging wall fixture, easily accessible at all times

Check Big Repairs

we established a preventive maintenance program as soon as I took over. Preventive maintenance was not new to me as we had been using it for several years in the company's Springfield, Ill., garage, where I was in charge of the fleet for 26 years.

Our preventive maintenance program is built on the basis of frequent inspections rather than on more extended inspections at longer intervals. Our mechanics spend more time on inspections and adjustments than on actual repair work. We would rather they spend their time on inspections than on repairs. It is because of this that we keep each truck operating almost continuously.

Radiators are inspected each time a driver gets gas at the company

pump in the garage, and also on the road when considerable variations in temperature occur.

Each driver makes a daily report on the condition of his truck, whether or not any work is necessary on it. A printed form, illustrated in Fig. 2, is provided for his report. This has spaces for the date, vehicle number, speedometer reading out and in, etc., and for any repairs and adjustments recommended.

If repairs and adjustments are necessary, these are made and a statement signed by the mechanic with the date the work is done. By following the recommendations on these daily reports, practically all minor repairs and adjustments are

cared for immediately. This saves much trouble which might develop, if not given immediate attention.

Once a week, tires are tested for inflation. Any undue wear or abrasions are usually discovered at this time. At the same time, batteries are checked and water added.

Greasing occupies a very prominent place in our preventive maintenance program. Heavy units are greased every 500 miles or 30 days, whichever comes first. Light units are greased every 1000 miles or 30 days, whichever comes first. At the same time, brakes, steering and clutch clearances are inspected. Tires also are inspected at this time for excessive wear.

(TURN TO PAGE 78, PLEASE)

FREE

PUBLICATIONS

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VALUABLE AIDS FOR FLEETMEN

A selected list of the latest literature — books, pamphlets and catalogs — intended to help fleet operators solve maintenance and operating problems. They are more valuable today than ever before. All are free. To get your copies simply fill in the numbers on the postcard and mail. No stamp is needed.

L172. Training Manual

Fleet operators who are looking for good, practical material for use in training mechanics will find something definitely out of the ordinary and very worth while in a manual entitled, "ABC's of Automobile Construction and Design." This is a book prepared by leading maintenance experts in the automotive field, and with automotive maintenance in mind. It explains in simple terms and clear illustrations, the nature and purpose of the principal parts of an automobile — running gear, power plant, power transmission, body and control instruments, lighting and accessories.

Such closely allied subjects as types of bearings, engine compressions, as well as the commonly-used small hand tools are similarly discussed in an elementary manner.

It's free for the asking and COMMERCIAL CAR JOURNAL readers will be supplied with as many copies as they can use to advantage. Simply write L172, and quantity desired, on the free postcard.

L173. Synthetic Repairs

The unique feature of a folder just published on synthetic tube repair is that all the basic data required is condensed to a small sheet measuring 8 x 10½ in.; which is folded twice to make it of more convenient size, so that it may be kept with tube repair

material or in the cab for the driver's reference, if necessary.

The instructions for synthetic tube repair are reduced to five simple rules. The rules are briefly but clearly explained and accompanied by 14 photographic illustrations.

A folder of this type is particularly good to hand to the mechanics and drivers. Write L173, and quantity desired, on the free postcard.

L174. Fibre Bushing Sample

Fleet operators interested in the fibre gear shift lever bushings manufactured by Champ-Items, Inc., of St. Louis, and described on the following page, may obtain samples for test and inspection free of cost or obligation.

Write L174 and the make and model of vehicle for which desired on the accompanying free postcard.

L175. Oil Filter Manual

"The useful economic life of the crankcase lubricant is proportionate to its rate of contamination." This statement, taken from a new manual on the use and maintenance of oil filters, might well be its key theme.

Twenty-eight pages are devoted to a vivid, graphic portrayal of the whys and wherefores of oil filtration. Included is a graphic explanation of oil contamination. The formation of asphaltene which results in sludge and

engine varnishes is thoroughly explained and illustrated.

While much of the material is devoted to filter construction details, nevertheless, there is much data that can be profitably absorbed by every fleet maintenance man. The manual is prepared in loose leaf form, 8½ x 11 in., and profusely illustrated with photographs, drawings, charts, etc. Write L175 on the free postcard for your free copy.

L176. Truck Tire Tips

While there are many good booklets available on truck tire care, here is one that definitely should be classed as a "must."

The best way to describe the book is to quote some of the chapter headings, which follow: How Overloading Increases Tire Costs, How To Boost Mileage Through Proper Inflation, How Speeds Affect Tire Mileage, What To Do To Combat Uneven Pressure Build-Up, What Happens With Mismatched Duals, What Happens To Tires When Traveling On Crowned Roads, How Uneven Distribution Of Load Affects Tire Mileage, Why Proper Spacing Of Dual Tires Is Important, Why Correct Rim Size Is Vital To Tire Mileage, What To Do About Air Pressure When Truck Is Running Light, Causes Of Uneven Tread Wear On Dual Wheels, How Mechanical Defects Cause Front Wheel Wear, Proper Storage For Tires And How It Affects Mileage, How To Dismount And Mount Truck Tires, A Guide To Proper Tire Removal and Application.

There are 24 pages, 8½ x 11 in., replete with photographic illustrations, line drawings, charts, etc., to explain all points. You may have a copy simply by writing L176 on the free postcard.

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NEW PRODUCTS

P206. Heavy-Duty Clutch Plate

A new type, heavy-duty clutch plate which permits two to three times more service mileage than conventional plates for trucks has been announced by The Monmouth Products Co., Cleveland, Ohio.

Known as the Monmouth "Metalix" clutch plate, this flexible center-drive plate absorbs sudden torque and dampens vibration due to uneven power impulses. Patented construction prevents breakage of springs around drive hub and prevents them from becoming permanently set.

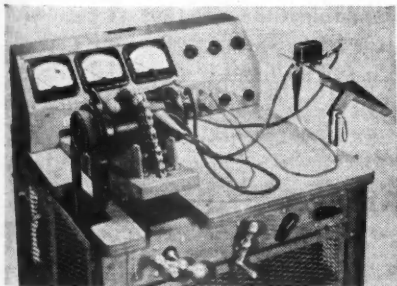
Each face plate has six spring steel segments to cushion the clutch action, assure smooth, positive operation and permit safe pick up of heavy loads.

Use Free Postcard For More Details.

P207. Generator Test Bench

A new test bench offers a practical, dependable means for locating and correcting trouble in the generator, regulator and cut-out. It can be used on 6-, 12 and 24-volt generators.

This test bench is made by Lanagan & Hoke, Philadelphia, Pa.



An unusual, practical feature is that it can be operated either with or without a storage battery. It is equipped with variable nichrome resistance units, which makes it pos-

FOR FLEET OPERATORS

The latest in shop equipment, supplies, replacement parts and accessories developed by manufacturers for fleet operators. For more details of any product described, fill in the number on the postcard and mail. No stamp needed. Also use the postcard for additional information on any product advertised in this issue.

sible, at any one of the three voltages, to vary the current output from the generator in 5 amp. steps from 0 to 60 amp. This is done by one control in easily graduated steps. It eliminates the necessity of taking the storage battery condition into consideration when setting the regulator, and makes possible the testing of a generator without the regulator.

The vise for holding the generator is a substantial, easily adjusted unit which permits instant belt tension adjustment.

Use Free Postcard For More Details.

P208. Shift Lever Bushings

Champ-Items, Inc., St. Louis, has introduced a line of fiber bushings designed to replace the standard rubber bushings, and make a permanent repair.

The manufacturer states that these bushings can be installed without removing rods. It is claimed that they are not affected by oil or water, and keep a positive adjustment.

Use Free Postcard For More Details.

P209. Truck Rim Nut Set

The New Britain Machine Co., New Britain, Conn., is marketing a rim nut set designed to handle eight different rim nut sizes, which covers the full range of truck rim nuts.

Included in the set is an extension

and pry bar that makes it possible to use the New Britain 3/4-in. drive sockets. All sockets can be used with the regular 3/4-in. drive handles.

The set is packed in a convenient "Tote Tray," 20 in. long and 10 in. wide. A priority rating of AA-5, or higher, is required.

Use Free Postcard For More Details.

P210. Automatic Flusher

Here's a unique time- and labor-saving device that not only should expedite radiator flushing but pro-



vide an easy method of scale removal. It is a portable unit equipped to circulate degreasing and descaling (TURN TO PAGE 146, PLEASE)

Quotes of the Month

On Timely Topics

1. Super Synthetic Tubes

2. Women vs. Men Drivers

3. Post-War Speed Effects

4. Absence of PM Treason

Super Synthetic Tubes

by **F. B. DAVIS, Jr.**

Chairman of the Board,
United States Rubber Co.

AS of today, passenger car tires of 100 per cent Buna-S, also known as GR-S, are satisfactory. When we are again permitted to drive at pre-war speeds, you can count on the rubber industry to produce a tire which will still be satisfactory.

Medium heavy service truck and bus tires still need some natural rubber. The amount has been gradually reduced until in most instances we now use only 10 per cent natural with the synthetic to make a satisfactory tire.

In large size heavy-duty truck and bus tires the amount of natural rubber requires, when used with rayon cord, runs as high as 65 per cent. Replacement needs for essential civilian truck and bus tires for this year were estimated at 6,000,000. Their construction requires rayon cord, of which there is a drastic shortage. It is doubtful if more than 4,000,000 truck and bus tires will be available in 1944. It now appears that little expansion can be expected in rayon cord production until late this year, too late to have the tires ready when they are most needed—during the hot summer months.

Considerable difficulty has been encountered in making satisfactory tubes of Buna-S. We have not worried too much over the tube situation because we knew we could make excellent tubes of Butyl synthetic rubber when it became available. Production is now getting under way on Butyl tubes for military use. In one respect they are even better than tubes of natural rubber, namely, their

ability to hold air. In fact, their air retention properties are so superior that the motorist can look forward to the day when he will need to have the air in his tires checked no more often than when he has his car greased.

Women vs. Men Drivers*

by **T. J. BEATSON**

New York Personnel Manager,
United Parcel Service

ON the subject of women drivers I cannot speak from experience because we have not found it necessary to hire women as yet in the New York area. We have, however, employed 26 women drivers in Los Angeles and San Francisco. J. D. Stockman, Southern California personnel manager for United Parcel, reports the following findings:

On the favorable side, women proved to be safe drivers averaging 400 driver days per accident; they grasped the non-driving fundamentals of the job more quickly than men do; they had fewer complaints for loss and damaged goods; they had no complaints for dishonesty and none for misconduct. The public reaction also was good.

On the unfavorable side, their production was low, the best woman driver being about equal to the poorest man driver even with pre-selected conditions of good territory and light loads. Their production peak was passed after the second hour when physical exertion from getting on and off the truck, plus walk-ups, began to take its toll. Compensation injuries were high, about 40 per cent being involved, but injuries were minor in character. Absenteeism was high, averaging one day per week.

Of the original 26 hired, four still remain who are considered acceptable. It should be borne in mind that shortages in woman-power exist in that area also, and that the best selection is probably not possible due to the competition of many desirable defense jobs in the area. On the basis of Mr. Stockman's experience it would appear that women can be used for driving jobs if labor shortages exist, although comparable work cannot be expected on all phases of the job.

Post-war Speed Effects*

by **E. H. HOLMES**

Senior Highway Engineer-Economist,
Public Roads Administration

THE ODT directive requiring speeds be held to 35 m.p.h., coupled with parallel action by many State governors and legislatures combined to reduce speeds to an average of 36 m.p.h. on main rural highways. Speeds prior to the war averaged 47 m.p.h. on the same highways.

Since this low, reached in the late fall of 1942, speeds have been slowly but steadily rising throughout the country. By the fall of 1943 the average was close to 40 m.p.h.

There is every reason to believe that once wartime restrictions are lifted, speeds will rapidly return to their prewar levels. Unless there are powerful campaigns of education and enforcement, backed by effective legislation, prewar speeds will again prevail. And accompanying this increase will be a wave of accidents and fatalities as vehicles and drivers, figuratively rusty through disuse, and with every variety of prewar, recapped and synthetic tires, find the strain too great. Furthermore, it is reasonable to believe that we can look to the States having the highest speed limits or no fixed limits at all to take the lead in the postwar accident toll.

Absence of PM Treason*

by **E. B. STOCKMAN**

General Superintendent of Transportation,
Consolidated Edison Co. of N. Y.

YOU are all familiar with the ideas embodied in what is generally referred to as preventive maintenance and yet, believe it or not, I (TURN TO PAGE 110, PLEASE)

* From papers delivered at 15th Annual Greater New York Safety Council Convention.

You can depend on Exides to last longer



It is only natural that *quality* batteries should last longer. Exide Batteries are built to last longer. It's by giving longer, more dependable service that Exides are able to contribute more to the war effort . . . through helping to get things done quicker.

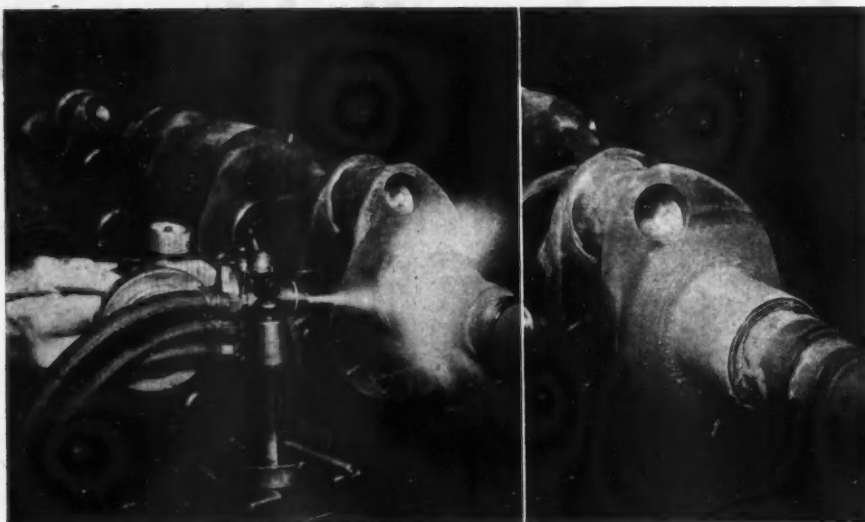
No matter how good a battery is, however, it must be given proper attention. Periodic check-up will help to increase the life-span and dependability of your Exide. Follow the simple rules of care and get those extra miles of service. For when you bought an Exide, you *Bought to Last*. By taking care of it, you *Save to Win*.

If you wish more detailed information, or have a special battery problem, don't hesitate to write to Exide. We want you to get the long-life built into every Exide Battery. Ask for booklet Form 2984.

THE ELECTRIC STORAGE BATTERY CO., Phila. 32
Exide Batteries of Canada, Limited, Toronto



Exide
EXTRA DUTY
BATTERIES



Metal Spraying is Paying

**A review of the range of possibilities,
cost data and technical skill required
for such work in the average fleet shop**

by G. C. CLOSE

MUCH has been written about metal spraying relative to the technical aspects of using the process for salvage, maintenance, and repair of auto and truck elements and parts. Unfortunately most writers on the subject dwell entirely on the technology of the process and fail to answer many questions that would be broached by any fleet owner or operator before he laid cash on the line for new metallizing equipment.

"I'll admit that metal spraying would solve a lot of our problems," the superintendent of a large repair shop said recently to the author. "However, other factors are involved. How does metallizing compare with

welding? How long will it take me to train men to use the equipment? Is metallizing wire and equipment available on my priority rating? More specifically, how much wear can I expect from a metallized crankshaft bearing, and how much will it cost to do the job?"

Such questions are entirely logical. No matter how technically perfect a process may be, when commercial enterprise is involved, all economic factors must be considered. Gold is an ideal metal for plating purposes, and will protect steel indefinitely from corrosion. Yet, who has seen a gold plated railroad bridge?

Granted, then, that from a techno-

"I'll admit that metal spraying would solve a lot of our problems," the superintendent of a large repair shop said recently to the author. "However, other factors are involved.

"How does metallizing compare with welding?

"How long will it take to train men to use the equipment?

"Is metallizing wire and equipment available on my priority rating?

"More specifically, how much wear can I expect from a metallized crankshaft bearing, and how much will it cost to do the job?"

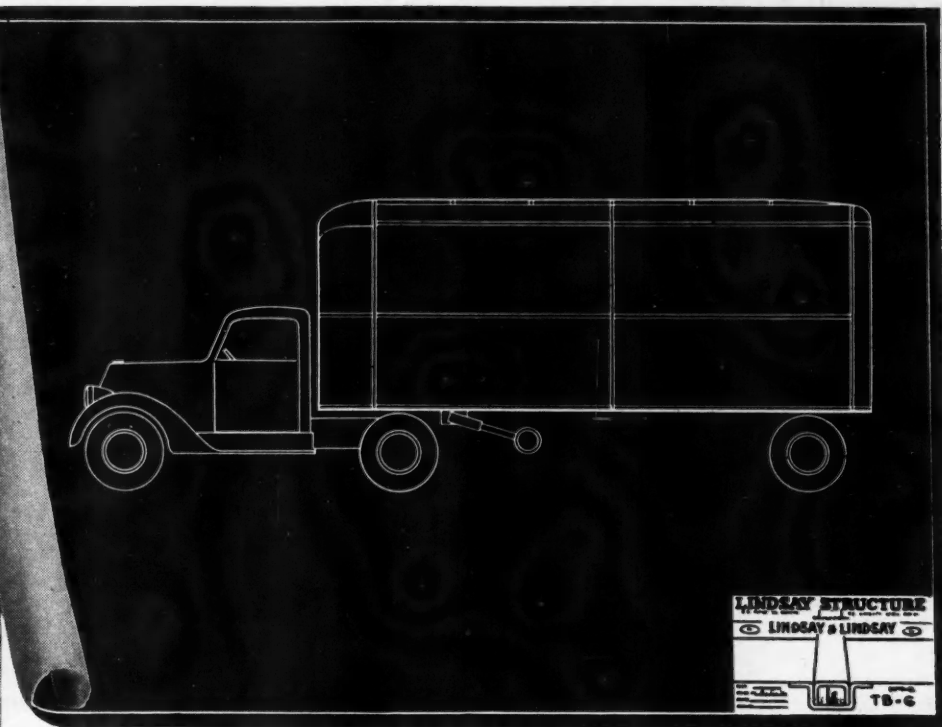
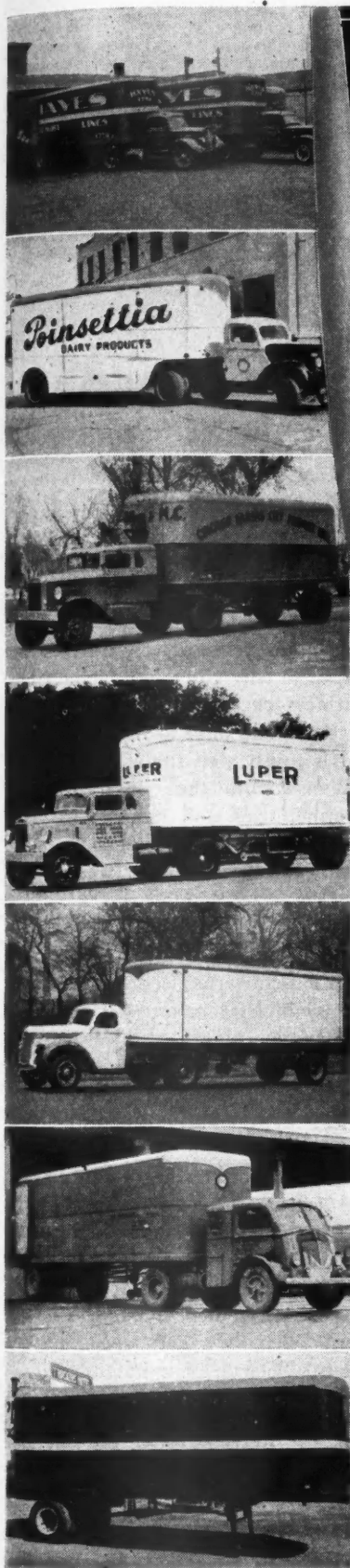
Other maintenance men have asked the same questions. Author Close answers them on the basis of his extensive experience and his contact with others in the field.

logical standpoint metallizing is a highly successful process, let us examine its possibilities in the cold light of financial returns. To accomplish this properly, several factors will have to be considered. Among the more important factors are:

1. Comparison of metallizing and welding, both as to results and costs.
2. Technical skill required to operate metallizing equipment.
3. Analysis of metallizing costs in relation to the value of parts reclaimed by the process.
4. Availability of metallizing wire and equipment, priority rating required, etc.

Metallizing vs. Welding

It must be remembered when comparing metallizing and welding that certain jobs adaptable to one process are not adaptable to the other. No logical comparison can be drawn in such instances. Sprayed metal has very low tensile strength, therefore, the possibility of joining a broken shaft by metalizing is beyond the scope of the process. On the other hand welding is not applicable to building up large flat surfaces, nor to laying a thin layer of corrosion resistant metal over a less-noble metal to protect it from highly corrosive mediums. A fractured part subject to tensile stress in service requires welding; a thin layer of metal applied to the surface is not sufficient. (TURN TO PAGE 88, PLEASE)



3 ways to rehabilitate your trailer fleet:

1. MOUNT NEW Ls BODIES ON YOUR OLD CHASSIS
2. BUILD NEW Ls BODIES ON NEW STANDARD CHASSIS
3. ADD TO YOUR FLEET WITH NEW LIGHT-WEIGHT Ls TRAILERS



Lindsay Structure, modern method of all-steel construction, utilizes all the strength of light steel sheets through uniform tensioning. Trailer bodies of Ls can help you maintain fleet efficiency under wartime conditions, meet post-war competition with reduced operating costs.

The unique strength-weight ratio of Lindsay Structure means increased over-all capacity with resulting larger pay loads. Maintenance costs are low with Ls, since parts are interchangeable and only damaged sections need be replaced.

Check the possibilities of Lindsay Structure trailer bodies today. Lindsay Structure Fleet Engineering Service engineers will help you design the body best suited to your needs. For information, write to Lindsay and Lindsay, Adams-Franklin Building, Chicago 6, Illinois; or 60 East 42nd Street, New York 17, New York.

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A view of the Camp Hood Truck Battalion Motor Pool showing some of the 437 vehicles in the battalion. Right—Dispatch boards keep tab on vehicles in and out

Truck Operation At Tank Destroyer Center

**Headed by ex-fleetman, truck battalion
compares to large fleet operation. Proper
maintenance and driver training stressed**

by Lt. D. D. SAGGESE

Tank Destroyer School, Camp Hood Texas

WITH the advent of modern warfare, and the accent on speed and movement, it is only natural that trucks would be called upon to do their bit. Today most of our army is mechanized. The brains and equipment that made America the most motor-minded of nations are now busy working out the problems of moving men and material to our far-flung fighting fronts in the shortest possible time.

Here at Camp Hood, Texas, where Tank Destroyers are trained, speed is the keynote of all training. Motors and guns have been combined to make one of the hardest hitting units in any army in the world. Let's take

a look into the truck battalion motor pool at Tank Destroyer Center and see just what is happening to all of that equipment you haven't been able to buy as freely as before trucks joined the army.

Let's walk in on Lt. K. V. Hutchings, Motor Officer of the truck battalion. Lt. Hutchings was formerly the operator of a large fleet of trucks operating in and around metropolitan New York City. As motor officer he has under his supervision the maintenance of 437 vehicles—one battalion, a good-sized fleet in itself. Tractors and trailers, two and one-half tons, jeeps, weapons carriers, command and radio cars, half-ton pick

ups, ambulances, sedans, wreckers and motorcycles. Here then is the answer to why you can no longer buy that new truck you need or that trailer you should have to replace the one that is pretty well shot. Here, too, is the answer to the conservation of gasoline, tires and manpower.

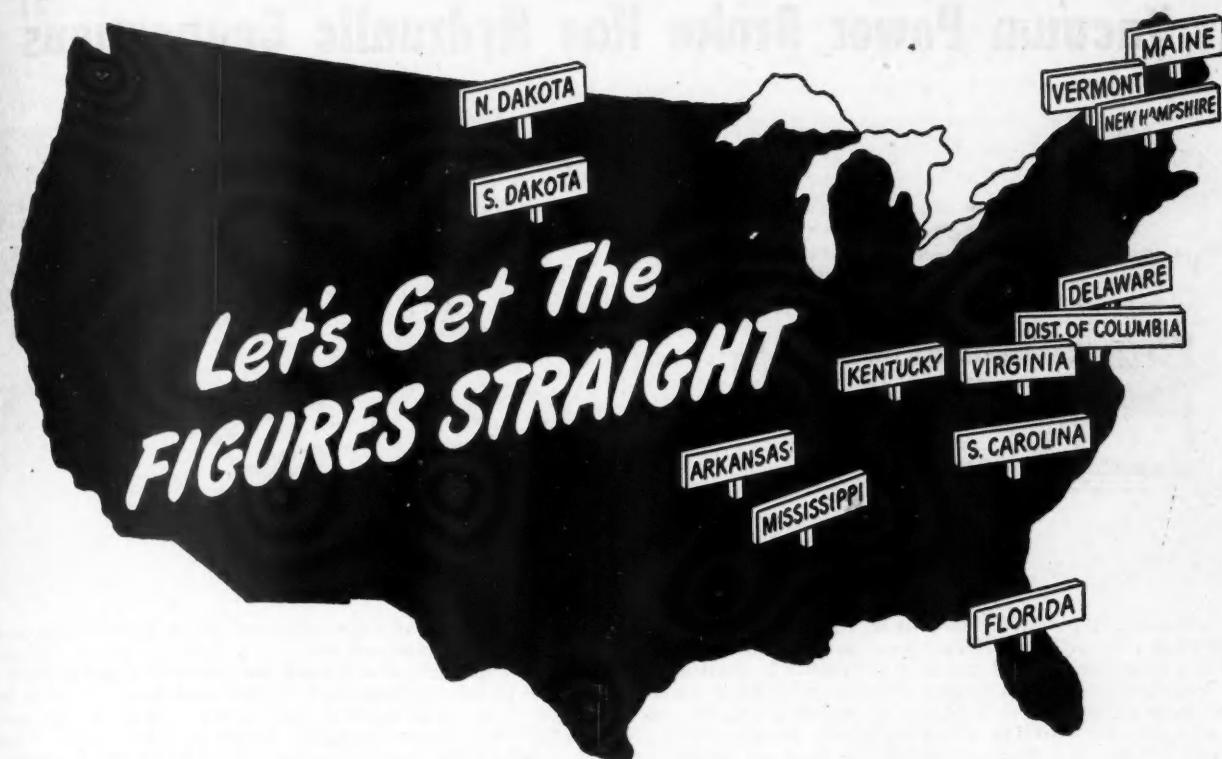
This battalion dispatches an average of 1250 vehicles per week which travel an average of 35,000 miles, almost one and one-half times the distance around the globe. And this battalion concerns itself with training only right here in Camp Hood!

Very few of those miles are over hard surface roads; 95 per cent of the distances driven is either over caliche (Texas clay) roads or across country. The runs these vehicles are put through are most grueling to men and motors, because here, in training, is the time to discover mechanical defects; here men must learn to maintain these vehicles at their highest peak of efficiency. It's too late to learn when they get to the fighting fronts. Then a loose nut or bolt, or a careless adjustment, may not only cause the loss of the vehicle but of precious American lives as well.

Drivers Taught Maintenance

Every driver must be familiar with his vehicle, must keep tire pressure up, oil up to proper level, body and motor right. He checks constantly and at every stop to be sure that all parts are functioning properly, that there is no overheating. It becomes part of his driving habit.

Here, in the army, vehicles are
(TURN TO PAGE 66, PLEASE)



IF YOU LIVE in one of the States listed here, this message *directly* concerns you. If you do not live in one of them, you are nonetheless vitally affected.

That's because anything which restricts the efficient operation of motor trucks and trailers—*regardless of which State applies the restrictions*—takes dollars out of your pocket! You eat the food and use the goods brought to you by trucks and trailers from all over the country. And the delivery cost is in the price you pay.

But, aside from that, trucks and trailers are essential to the movement of war materials—and anything which hampers their usefulness directly affects our war effort.

The States shown here have two laws controlling the weight of a truck-and-trailer combination:

AXLE WEIGHT
18,000#
(OR MORE)
PER AXLE



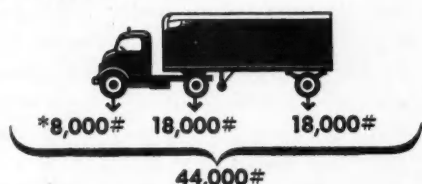
GROSS WEIGHT
40,000#
MAXIMUM



An axle limitation prevents concentrating too much load at any one point on the highway.

And, the 18,000-pound restriction is the figure recommended by the American Association of State Highway Officials and the Public Roads Administration as providing adequate protection.

So, on this basis, the permissible load would be:



*8,000 pounds is the maximum weight obtainable on the front axle with most vehicles.

But, all of these States have also limited the total gross weight to 40,000 pounds—so we must cut our load some 4,000 pounds in spite of the fact that 18,000 pounds per axle is admitted to be a safe limitation!

Why the 40,000-pound restriction?

Some State officials may say, "That is because we have some bridges which won't carry bigger loads."

In the interest of the war effort, if nothing else, doesn't it seem logical in this case to either (1) strengthen the weak bridges or (2) post them with warning signs so

the haulers of war goods can simply re-route their trucks?

Should a State's entire highway system be partially wasted because of a few weak bridges?

This example is only one of many. Here are others:

- Maine allows 22,000 pounds per axle—but only 40,000 pounds gross.
- Nevada and Texas restrict gross weight to 38,000 pounds, the lowest allowance in the nation.
- Illinois and Tennessee disregard the recommendations of highway officials—allow only 16,000 pounds per axle.

And, three of the States listed here—Arkansas, Florida and Kentucky—liberalized their hamstringing laws only for the emergency period. Their old laws are still on the books—and will again be enforced unless the Legislatures take action.

Since motor transport does play such an important part in our war effort and in the private life of every citizen, you should know exactly how your State stands on this subject.

Send for the interesting Fruehauf booklet "Are the United States United?"—it will give you the story.

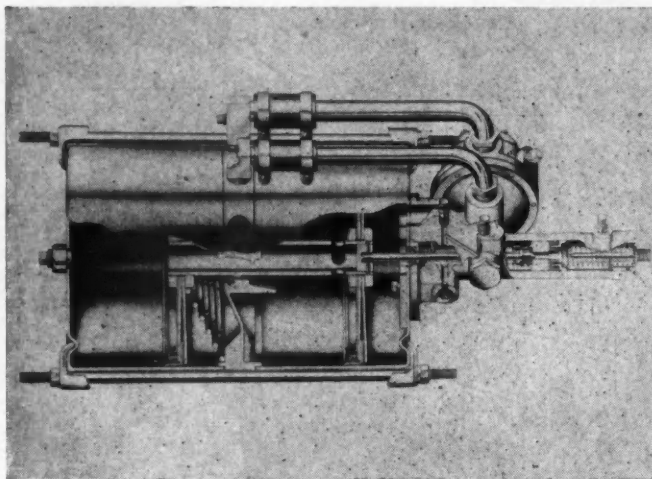


World's Largest Builders of Truck-Trailers

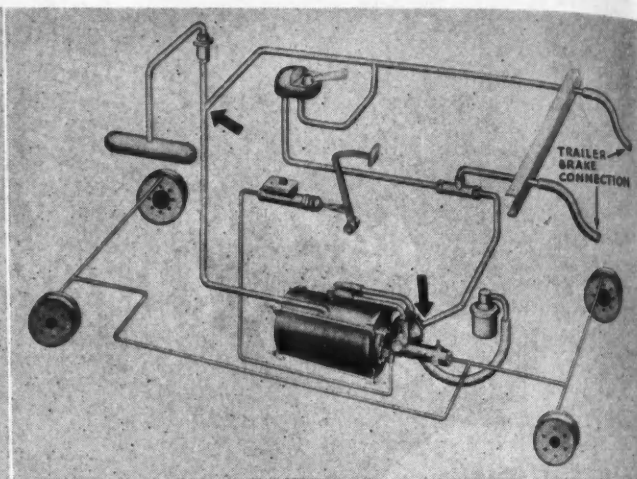
Service in Principal Cities

FRUEHAUF TRAILER COMPANY  **DETROIT**

Vacuum Power Brake Has Hydraulic Connections



This tandem-cylinder BK "Hydrovac," most recent development of Bendix Aviation Corp., now equips more than 500,000 American and Allied military vehicles. It combines in one compact assembly a completely self-sustaining vacuum power braking system consisting of a tandem power cylinder, and a hydraulic cylinder which transmits braking force to the wheel cylinders. Connections to the braking system are



hydraulic, instead of mechanical as in former conventional systems; no external moving parts, levers or linkage are needed. At right is a typical tractor-trailer installation. Foot brake pedal operates both tractor and trailer brakes but independent hand control for trailer brake can be provided optionally. Arrows indicate points at which trailer hookup is made. The remainder is a tractor or truck installation

TRUCK OPERATION AT TANK DESTROYER CENTER

(CONTINUED FROM PAGE 64)

never overloaded. An overloaded vehicle traveling across country is just asking for trouble. A broken axle or any other damage that would stop one single vehicle in combat will endanger the entire column. A stopped vehicle is like a beacon shining in the night to the enemy, asking to be used as an artillery registration point and bringing down enemy fire on all surrounding territory. Thus, overloading vehicles, here in the army, does not only mean shortened life of equipment, but also means the potential loss of the lives of American men.

Cleanliness, too, comes in for its share of attention. When a vehicle comes back to the pool after a hard day's usage, it is first driven onto the wash rack and given a shower bath, wiped off, and air cleaners are serviced. This is done primarily to keep the vehicles running in top order and to hold down the seepage of dust into the motors, which causes abrasion and wear. Conditions such as were encountered in the North

African desert campaign showed the value of this training. Vehicles were kept running there under the most trying conditions, simply because personnel had been trained to keep danger points clean—an ounce of prevention again proving to be worth a pound of cure.

At Camp Hood, as in all military installations, a battalion operates as a distinct unit comparing to a large transportation company. All vehicles assigned to a battalion are kept together, when not in use, in what is called a "motor pool" or the equivalent to a garage. Responsibility for care and maintenance is then broken down into companies, which are like branch offices of a large transportation office. Each company has its own vehicles and is solely responsible for the condition of these vehicles.

Keeping Track of Trucks

In order to keep a constant check on each vehicle the army adapted the federal prison system. When a new vehicle enters the motor pool it is immediately given a number, and from then on it is known by that number. When a vehicle leaves the pool, it leaves by the "out gate." The

guard at the out gate records the number and immediately telephones it to the guard at the "in gate."

At the in gate a board is kept with the number of each vehicle on a small tag. The system works in this fashion: When information is received at the in gate that a vehicle has left the pool, the number on the board corresponding to the number on the vehicle is turned face down. When the vehicle enters the in gate the number is again turned face up. It is then a simple matter, by a glance at the board, to check on which vehicles are in the pool and available for use. All numbers visible on the board are vehicles in the pool and ready for use and all numbers turned face down are vehicles out on missions.

In addition, each vehicle has its trip ticket when it leaves the pool. On it is recorded the number of miles shown on the speedometer and, upon its return, the number of miles traveled must be accounted for over the signature of the responsible officer. Mileage is restricted to military use. Woe soon befalls anyone attempting to use an army vehicle for anything except necessary military (TURN TO PAGE 69, PLEASE)

TRUCK OPERATION AT T-D CENTER

(CONTINUED FROM PAGE 66)

use. This trip ticket is also used to record any improper functioning of the vehicle during its run, so that the vehicle can be properly serviced immediately.

6000-Mile PM

A systematic periodic check of all vehicles in the battalion pool is also closely supervised, all vehicles being turned into the battalion shop for 6000-mile check-ups, at which time they are carefully gone over, from bumper to bumper.

Each morning, at 11:30, the company motor officers report to the battalion motor officer and, at that time, a round table is held. Complaints are registered and checked into, and steps are taken for the correction of any errors in maintenance. Also new ideas are discussed for getting more out of existing equipment, and other things pertaining thereto. These company motor officers are the equivalent of superintendents in large trucking concerns, and the battalion motor officer more or less fills the duties of traffic manager. All in all, close liaison is maintained for better understanding of the problems involved.

At these conferences, vehicles are "deadlined." That is, when a bad defect shows up, making a vehicle unsafe for operation, it is taken out of service and sent up for higher echelon repair work. In this connection, the following figures give a good idea of what good maintenance can do toward keeping existing equipment rolling.

Maintenance Pays Off

During the four-week period in October, a total of 4559 vehicles were dispatched, and 111,335 troops were carried for a distance of 110,344 miles. In that period there were only 35 lost days, or the equivalent of one vehicle laid up for 35 days. Truly, a remarkable record for maintenance of the proper kind.

But just a moment. Let's see what is behind these impossible figures; remembering, of course, that they are only for one truck battalion, and are used for training purposes alone. These figures do not represent dead weight or cargo. Translated to battle-

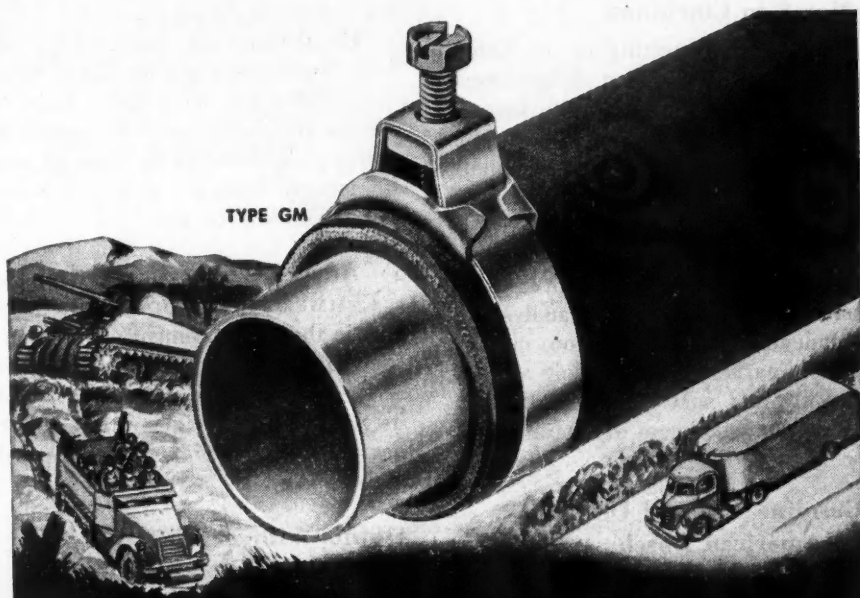
fields they represent enemy equipment destroyed and the assurance that many American lives will be saved.

Camp Hood has miles of the finest ranges to be found anywhere. Terrain ideal for training purposes—rolling hills, draws, woods, and flat plains, and the weather is ideal for year-round training. These ranges plan an important part in the training of Tank Destroyers and are used extensively. Trucks are used to transport personnel to and fro with a minimum loss of training time, so that more

hours of each day can be spent in actual gunnery practice—practice which pays off in enemy equipment destroyed on the battlefields. Without trucks for transporting personnel and material, valuable training time would be irrevocably lost; time which can not be made to stand still while we prepare and train our men for battle—time which makes the difference between a good live Tank Destroyer and a poor dead one.

END

(Please resume your reading on P. 70)



TYPE GM

DEPEND ON WITTEK

NOC-OUT

HOSE CLAMPS



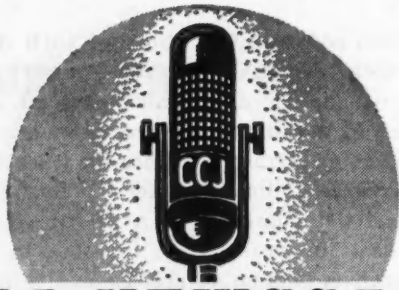
Type A—Adjustable
For Replacement.



Type HP—For High
Pressure Require-
ments.

The standard of the industry. Quick-tightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.

WITTEK  **NOC-OUT**
HOSE CLAMPS



CCJ NEWSCAST

ATA's Spring Meeting Opens May 8 in Cincinnati

The spring meeting of the Safety and Operations Section of the American Trucking Associations, Inc., is scheduled for May 8 and 9 in the Netherland Plaza Hotel, Cincinnati, Ohio. Current wartime problems will be discussed on a full two-day program, billing many prominent speakers whose subjects will cover manpower, personal training, analysis of accidents, federal legislation, maintenance, parts shortages, theft and hijacking and post-war topics that include re-employment of veterans.

Gasoline Injector Developed by American Bosch

Gasoline injection, a radically new method of supplying fuel to the cylinders of gasoline engines, has been developed and now is in production by the American Bosch Corp., Springfield, Mass. This method of fuel supply is adapted from the diesel engine, in which fuel is delivered to the cylinders in much the same way.

Construction data are shrouded in secrecy due to military use of gasoline injection.

Many advantages are claimed for gasoline injection as compared to the present system of carburation. Donald P. Hess, president of American Bosch, enumerated a few, as follows:

"The engine equipped with gasoline injection responds instantly to the touch of the throttle. Time lag is eliminated, acceleration is smoother, and the engine performs more quietly and more surely under all conditions.

"Backfires are eliminated by this method, because the fuel, either in fuel or vaporized form, is confined within the engine cylinders. The air induction system carries air only,

which is not mixed with the fuel until it reaches the cylinders.

"By the use of this system, all fuels, even lower grades, burn more completely and efficiently. Thus, a greater proportion of their potential power is delivered in the form of useful energy. Miles per gallon increase, cost per mile decreases."

Advertisement Correction

COMMERCIAL CAR JOURNAL regrets that in the advertisement of the Manbee Equipment Co., 408 S. Kolmar Ave., Chicago 24, Ill., on page 146 of its April issue the illustration of the portable axle straightener appeared upside down.

Outfits With Trucks Over 16,000 Lb. Gross "Critical"

"Key personnel of those trucking companies whose equipment is more than 16,000 lb. gross weight of vehicles" is included in the list of critical activities submitted to the Selective Service by the War Manpower Commission Inter-Agency Committee on Occupational Deferments to assist in handling claims for deferment of registrants under 26 years of age.

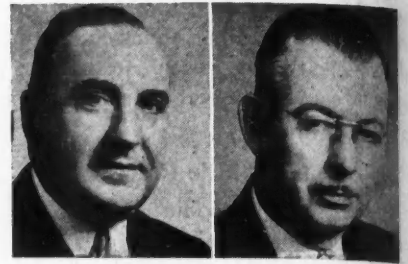
For-hire trucking is listed separately among the critical activities and is given the same definition as that for railroads, which reads: "Personnel engaged in railway and motor transport service directly related to the movement of war freight necessary to support the immediate war objectives the withdrawal of which would decrease the safety, speed and volume of movement so as to adversely affect such war objectives."

Dugas and Ansul in New Office

Dugas Engineering Corp., a subsidiary of Ansul Chemical Co., Marinette, Wis., has acquired new office

quarters in the Lincoln Building at 60-E. 42nd St. Glen Stratton will be in charge of Dugas and T. R. Kearney will represent Ansul.

(TURN TO PAGE 72, PLEASE)



Frank J. P. Haske, left, at one time automotive consultant to the ODT and, previously, with WPB Automotive division, has been appointed general sales manager of Barrett Equipment Co., St. Louis, Mo. Cliff S. Garstang, right, assistant sales manager and assistant secretary, has been promoted to director of sales and service of all Barrett national accounts



Russell E. Ebersole has been appointed lamp sales manager of the Westinghouse Lamp Division with headquarters at Bloomfield, N. J.

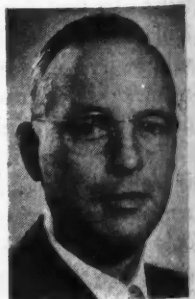


Jim Bohrmann, who has directed Radiator Sales for Perfex Corporation, Milwaukee, has been appointed manager of the Radiator Division.



Tom W. Moss has been appointed automotive consultant of the Barrett Equipment Co. to conduct a survey to aid post-war planning

T. F. Kilcomons, recently assistant district manager of the ODT Motor Transport Division office in New York City, has been appointed eastern zone manager of Studebaker's Truck Division in New York and Boston.



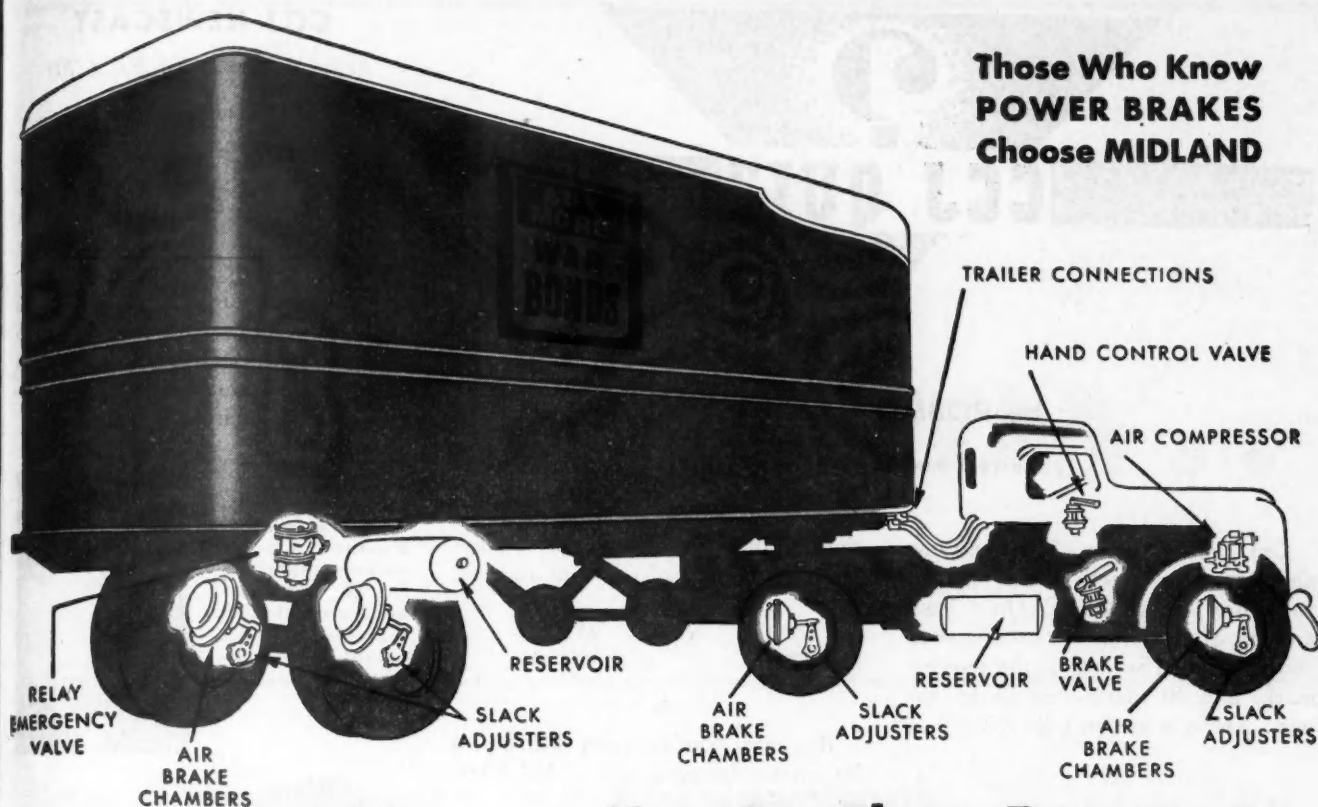
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**Those Who Know
POWER BRAKES
Choose MIDLAND**

MIDLAND KITS
are available in both
AIR and VACUUM

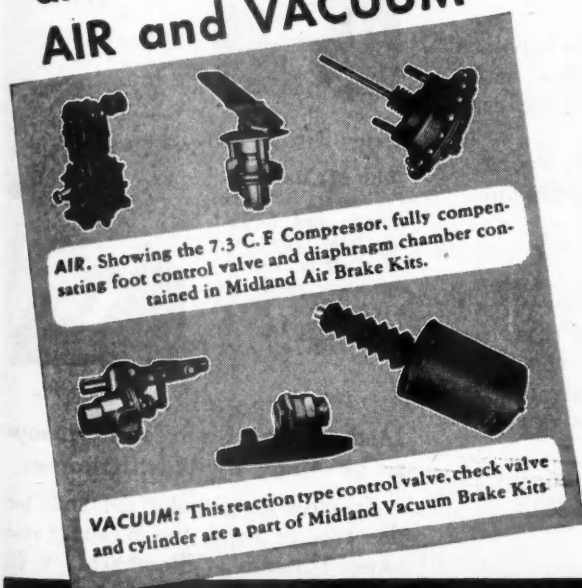
You Get These Features in MIDLAND AIR BRAKES

Simplicity in design, thorough engineering and rugged construction are back of the overwhelming preference for Midland Power Brakes.

Midland equipment on your trucks will stop any load quickly, safely, easily—require fewer brake adjustments—reduce driver fatigue.

Midland Power Brakes—in both Air and Vacuum—are backed by our famous "Factory Rebuilt Exchange Plan." And there are Midland distributors to serve you in nearly 150 cities from coast to coast. Ask your distributor, or write to us for complete facts about Midland Power Brakes.

THE MIDLAND STEEL PRODUCTS CO.
10605 MADISON AVENUE • CLEVELAND, OHIO
Export Department: 38 Pearl St., New York City



MIDLAND

CHRISTENSEN

POWER BRAKES

CCJ QUIZ

by **ROBERT F. BAHL**

Correct Answers on Page 87

Can you answer 10 questions about trucks correctly? If you can, you score 100 on this CCJ Quiz. Take a credit of 10 points for each answer you get right. Seventy is the passing mark, and 90 marks you as an expert. Answers are on page 87.

1.

If you wanted a copy of the booklet, "Wartime Information for the Delivery Truck Operator," you would stop in at your nearest . . .

- a. Studebaker dealer c. GMC dealer
- b. Firestone dealer d. ODT office

2.

More than half of the states have adopted the one-plate license plan for 1944, but in one state it's legal to operate a motor vehicle without any license plates at all. It is . . .

- a. Pennsylvania c. Dist. of Col.
- b. Utah d. Idaho

3.

When R. L. Vaniman resigned as chief of the automotive division of WPB, he became export vice-president for . . .

- a. Goodyear Tire and Rubber Co.
- b. Bendix Products Co.
- c. Fruehauf Trailer Co.
- d. International Harvester Co.

4.

As our Russian allies keep pushing the Nazis back, you can be sure that there are plenty of American trucks in there pushing, too. In 1943, we sent to the Soviet Union . . .

- a. 9,000 trucks c. 58,000 trucks
- b. 23,500 trucks d. 173,000 trucks

5.

General Motors Corp. held a record high for any industrial organiza-

tion in the world when its employment at the end of the year reached . . .

- a. 10,000 c. 500,000
- b. 100,000 d. 2,000,000

6.

Recently, you've been hearing a lot about detergent oils. A "detergent" in an oil is . . .

- a. a cleansing agent
- b. a low temperature resistant
- c. an adulterant
- d. a yellow color

7.

Which of these men was appointed acting director of the Office of Defense Transportation upon the death of Joseph B. Eastman?

- a. Brig. Gen. Charles D. Young
- b. Lt. Col. John H. Middlecamp
- c. Bradley Dewey
- d. William J. Patterson

8.

Young Henry Ford II has been made vice-president in charge of sales of the great company founded by his grandfather. The new vice-president's age is . . .

- a. 18 c. 26
- b. 21 d. 33

9.

What is the expiration date of current Certificates of War Necessity?

- a. July 31, 1944
- b. December 31, 1944
- c. December 31, 1945
- d. No expiration date

10.

How many trucks does the average truck operator own? The average for the country would be . . .

- a. 1.4 trucks c. 5 trucks
- b. 2.5 trucks d. 10 trucks

CCJ NEWSCAST

(CONTINUED FROM PAGE 70)

213,911 Vehicles Released Since Rationing to April 1

Since the rationing program was placed in effect, March 9, 1942, a total of 213,911 vehicles of all types has been released, WPB announced. In this total are included 46,836 light, 117,765 medium and 25,966 heavy trucks, 20,648 trailers, 2,543 third-axle attachments and 153 miscellaneous vehicles.

Howard Lang, with Toledo Steel Products Co. in various capacities for 13 years, has been promoted to the position of assistant sales manager.



Howard Mann has opened a southwest district sales office for The Heil Co. in Dallas, Tex.



John M. Mathews, formerly with White and GMT, has been appointed district representative in Indiana for Reo Motors, Inc.



Instant-Start Fluorescent Lamps to be Made by Westinghouse

To meet the popular demands for this type of lamp, the Westinghouse Lamp Division at Bloomfield, N. J., has announced plans to manufacture an instant-starting 40-watt fluorescent lamp having the same rated life as the standard type of fluorescent lamp using conventional ballasts and starters.

The new lamp will eliminate the need for starters and will operate on a special type of instant-starting ballast. Limited quantities of these lamps will be available after May 1.

(MORE NEWS IN BACK PAGES)

NOW IN PRODUCTION..

New Mack Trucks for Civilian Pool:

Because of urgent and mounting essential civilian needs, the War Production Board has authorized the manufacture of certain types of trucks for commercial use.

Assigned to Mack are models ranging from 9,000 pounds gross vehicle weight up to the largest off-highway vehicle. Production on some models has already started.

Military production continues, of course, in all Mack plants.

We will gladly give you detailed information. Just drop us a line, or phone.



*Mack Trucks, Inc., Empire State Building, New York, N. Y.
Factories at Allentown, Pa.; Plainfield, N. J.;
New Brunswick, N. J. Factory branches and dealers
in all principal cities for service and parts.*

**IF YOU'VE GOT A MACK, YOU'RE LUCKY...
IF YOU PLAN TO GET ONE, YOU'RE WISE!**



Mack

TRUCKS

FOR EVERY PURPOSE

ONE TON TO FORTY-FIVE TONS

— BUY U. S. WAR BONDS —

FRONT-END MAINTENANCE

(CONTINUED FROM PAGE 55)

plan can be organized in accordance with the recommendations of the SAE-ODT bulletin on "Preventive Maintenance and Inspection Procedure" in which, in place of the general term "inspect," six letters are used to indicate exactly the work to be done, as shown in the Tables on this page.

Because of the many variables involved in the operation of all kinds of fleets, the schedule of steering mechanism service intervals given in Table I, in terms of mileage, is recommended to be followed. It also follows the schedule given in the "Preventive Maintenance and Inspection Procedure" bulletin.

In all steering mechanism maintenance or repair, it is essential to bear in mind that *road testing*, a very important part of any inspection program, is even more important as it relates to steering mechanisms.

ADJUSTMENT AND REPAIR

Axle Caster

Incorrect caster, either negative or positive, makes for difficult and unsafe steering. Unequal caster or axle twist causes a vehicle to pull either to the right or the left.

In adjusting or correcting caster, it is necessary to know the specifications covering the caster of the particular model vehicle being serviced and to be equipped with one of the several makes of caster gages available for this work. (Specifications for Caster, Camber, Toe-in, etc., will be found in the April, 1944, issue of *COMMERCIAL CAR JOURNAL*—Ed.)

When making a check of caster, it is important that the vehicle be level so that the weight is evenly distributed on all wheels, but with no payload in the vehicle.

The most frequent cause of change in caster is a bent or twisted axle. Such axles should always be *cold straightened*.

Steering Gear Adjustments

When making steering gear adjustments, the steering gear should be free of all load. The preferred method of freeing it is to disconnect the drag link from the pitman arm

TABLE I—MILEAGE INTERVALS FOR MAINTENANCE SERVICE

VEHICLE	A	MILEAGE INTERVAL			
		B	C	D	E
Light trucks, stop and start service—	Daily	500 to 2,000	3,000 to 5,000	20,000 to 30,000	40,000 to 60,000
Light trucks, long haul service—	Daily	1,000 to 2,000	4,000 to 6,000	40,000 to 60,000	80,000 to 120,000
Heavy trucks, stop and start service—	Daily	500 to 2,000	3,000 to 5,000	30,000 to 40,000	60,000 to 80,000
Heavy trucks, long haul service—	Daily	1,000 to 2,000	4,000 to 6,000	40,000 to 60,000	80,000 to 120,000

TABLE II—MAINTENANCE SERVICE AT MILEAGE INTERVAL

ITEM	A	B	C	D	E
AXLE—FRONT					
Axle and wheel alignment	L	TA	TA	TA
Steering knuckle, pins and bushings	OL	OHT	OH	R
Steering Arms	L	H	H	R
Tie-rod assembly	AOL	AOH	AOH	R
BRAKE SYSTEM					
Brake blocks or lining	T	TL	THA	THA	R
Brake drums, anchors and backing plates	L	H	H	R
FRAME, SPRINGS AND MOUNTING					
Frame	L	H	H	H
Springs, front and rear	L	H	H	R
Spring center bolts and U-bolts	L	H	H	R
Spring shackles and bushings	OL	OH	OH	R
Shock absorbers	L	OHT	OHT	R
STEERING					
Drag links	OL	OHA	R	R
Steering-gear arm—pitman arm	L	H	H	H
Steering wheel	L	H	H	H
Steering-gear assembly	OTL	OTH	OTH	R
Steering-gear mountings	L	H	H	R
WHEELS, RIMS AND TIRES					
Wheel bearings	OTL	OAH	R
Rims, studs and nuts	L	H	H	H	R
Tire pressure	L	TA	TA	TA	TA
Tire and wheel assembly balance	L	TH	TH	TH
Wheels	L	H	H	H

A—Adjust.
T—Test.

O—Oil, lubricate or grease.
L—Light or visual check-up.

H—Heavy or physical inspection and repair.
R—Replace, rebuild or recondition.

and loosen the instrument board bracket clamp on the steering column.

WORM AND SECTOR TYPE

Three adjustments are provided to take up wear on this type of steering gear and should be made in the following order when required:

1. End-play adjustment of sector shaft.
2. End-play adjustment of worm.
3. Back-lash adjustment.

CAM AND ROLLER TYPE

This type of steering gear is provided with two adjustments which, when required, should be made in the following order:

1. End-play adjustment of cam.
2. Back-lash adjustment.

Detailed instructions on the meth-

od of making these adjustments may be found in service manuals.

There are, of course, various modifications of these two types of gear, and there are still other types in service. However, these two are most commonly used.

Steering Knuckle Bushings

These bushings are, for the most part, made of hard bronze, but in some vehicles may be hardened steel.

Bronze bushings, if new ones are not available, may be salvaged by carefully removing them from the axle yokes by means of a puller, and placing them on a mandrel in a lathe and knurling them on the outside. When pressed into the axle yoke, the bushings will then contract enough
(TURN TO PAGE 76, PLEASE)

SHULER AXLES FOR "KENTUCKY" TRAILERS

Who said "a prophet is not without honor save in his own city"? Well, anyway, here's one case in which it isn't true. Because even here in Louisville, where Shuler Axles are made, everybody knows that Shulers are *tops* in axle quality!

Yes, "Kentucky" Trailers use Shuler Axles. We're glad to have this commendation from neighbors. But once you try Shulers, we believe you'll give us the same commendation, too, no matter where you're located, or how severe your requirements.

SHULER AXLE CO., Incorporated, LOUISVILLE, KY.

Export Division: 38 Pearl St., New York, N. Y.

West Coast Warehouse: Ford & Derby Streets, Oakland, Calif.

FRONT-END MAINTENANCE

(CONTINUED FROM PAGE 74)

to permit reaming to a fit for new pins.

If no new pins are available, the old ones can be built up by metal spraying and ground to size.

STEERING-LINKAGE

Tie Rod Ends

Tie-rod ends are of two types, the adjustable type and the so-called Thompson or nonadjustable type.

Both types have an end which is threaded to fit the tie rod in order to permit adjustment of the front wheel toe-in. A clamping arrangement is also provided to hold the adjustment.

In the adjustable type, tie-rod end, the other end is usually provided with removable, cupped-ball seats, which surround the ball end of the ball stud. The seats and ball stud are held assembled by a spiral spring which is retained by a threaded safety plug provided with slots so that the adjustment of the plug can be locked with a cotter pin.

If excessive wear appears in this type of tie-rod end, it can be disassembled and the ball stud and cupped seats replaced. The manufacturer's instructions should be followed in tightening the safety plug.

In the case of the Thompson-type tie-rod end, a serviceable repair can be made as follows, if no new ends can be obtained.

Remove the sealing disc or bottom plate.

Remove the ball end and dress it up as nearly as possible to its original shape.

Make up new cupped sockets about 0.050 in. heavier than the old ones and grind them into the ball end with valve grinding compound, the ball end being held in a vise and the cups clamped on the ball tight enough to get a ground fit.

Clean thoroughly and assemble the tie-rod end, using a new spring and spot welding the bottom plate in place.

While this is not as costly a job as it may appear, it is only suggested for use in event that a new part is not obtainable and the vehicle must be kept in service.

Adjustment of both types of tie-rod ends for control of front-wheel

alignment is made by loosening the clamp bolts with which the ends are provided.

Drag-Link Ends

After repair, the manufacturer's recommendation should be followed in tightening the drag-link ends. In cases where instructions are not available, the general rule is to screw in the end plug until assembly "bottoms" and then back off one-fourth to one-half turn and install cotter pin in slot in plug.

Checking Toe-in

Set front wheels of truck in straight-ahead position.

Roll vehicles ahead one revolution of the wheels to take out any lost motion in steering linkage.

Measure distance between center of tire treads at hub height at the rear of tires. Mark point on tires where measurement was taken and then roll truck forward until these marks are in front, and measure again at hub height.

The difference in the measurement will be the toe-in or toe-out.

If the amount of toe-in varies from the vehicle manufacturer's specifications, adjust to the correct toe-in by turning the tie rod, which is threaded right and left hand, until the proper adjustment is obtained, and then tighten clamp bolts on both tie-rod ends.

This method of measuring toe-in will eliminate errors in measuring, which would be caused by any run-out of wheels or tires. The above method of measuring is used where no direct alignment equipment is available.

Springs

The replacement and repair of springs is an important factor in proper steering maintenance. Before replacing a complete spring, information should be had on the load to be carried, the rated capacity of the spring and its deflection rate. Before re-arching a sagged spring, the same information should be obtained. In replacing spring leaves, the new leaves should always be the same thickness as the leaves removed.

Replacement springs or replacement leaves should be measured to determine whether or not the bolt-hole centers are the same as in the original.

A simple method of checking for misalignment of spring center bolts is shown in Fig. 4.

Dimension A is measured from center of shackle bolt to respective corner of axle housing. Bolt B-1 is perpendicular and correct for proper alignment and dimension A will be the same on the right and left side of truck. Bolt B-2 may be bent or broken and can allow axle to move forward or backward causing serious misalignment resulting in excessive tire wear. To check for bent or broken center bolts, measure distance A on the right and left sides of the truck. If not exactly the same, replace necessary center bolts to bring axle to proper alignment.

TIRE AND WHEEL BALANCE

Unbalance, particularly as it occurs on front wheels, causes tire pounding at one or more spots on the tread surface, resulting in fast and uneven wear.

When shimmy or tramp is noted and difficulty is traceable to unbalanced front wheels, the wheels should be put in static balance at least.

Truck wheels can usually be balanced, with the wheel on the vehicle, within fairly close tolerances. Whenever recapped or repaired tires are mounted, the wheel and tire assembly should be rebalanced.

Where equipment is not available for more complete balance, satisfactory balancing can be done by proceeding as follows:

1. Release brakes so there is no drag of the brake shoe against the brake drum.

2. Remove wheel, wash grease out of bearings, and remove grease seal.

3. Re-install wheel, with tire mounted, without any grease in the bearings and with a loose bearing adjustment.

4. With the wheel jacked up, spin the wheel, and if it always stops with the same point at the bottom, put a weight on the wheel opposite that point; and so continue until the tire will naturally stop spinning at any point it may reach in turning, rather than always at the same point.

5. Remove wheel, install grease seal, repack bearings with grease, re-install wheel and adjust bearings to correct tightness.

END

(Please resume your reading on P. 56)

not 2...
not 6...
but 26

More Power to your Fleet!
SEALED POWER
PISTON RINGS
26 Basic Designs

SEALED POWER engineers have gone all the way to help restore full power and economy to every engine in your fleet. They have developed not 2, not 6, but 26 basic designs of piston rings for use in Individually Engineered Ring Sets. Each set contains rings that have been specifically engineered to do the best possible job in a particular type and make of engine. For more than five years Sealed Power has been refining these sets. For more than thirty years Sealed Power has been producing rings for truck, car, and engine manufacturers. For best results, re-power with Sealed Power motor parts. Sealed Power Corporation, Muskegon, Michigan and Windsor, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts.

INDIVIDUALLY



ENGINEERED

SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! BEST IN OLD TRUCKS!

Many Checks Check Big Repairs

CONTINUED FROM P. 57

Form 128-3884-2-49

DAILY AUTOMOTIVE REPORT

VEHICLE NO. _____

DATE _____ 194__ IN _____ OPERATION O. K. _____

SPEEDOMETER READING—OUT _____ GALS. GAS _____ ANTI-FREEZE _____

ADDED ENROUTE—OIL _____

REPAIRS AND ADJUSTMENTS RECOMMENDED _____

SIGNED _____ DRIVEN _____

(THIS REPORT SHOULD BE MADE AT END OF EACH DAY'S WORK EVEN IF VEHICLE OK)

ABOVE REPAIRS AND ADJUSTMENTS COMPLETED _____ DATE _____

MECHANIC _____

REMARKS _____

Fig. 2 above is the form on which the driver makes a daily report on the condition of his truck. Fig. 3 at right is the general inspection report form on which items inspected are checked. A feature of this report is the complete engine data for each cylinder

Each 90 days, the 29 units operating in the outlying country come into the garage for a general inspection. The remaining units come in every 3000 miles or four months, whichever comes first.

A printed form, called the general inspection report and shown at Fig. 3, is used to check the items inspected. An important feature of this report is complete engine data for each cylinder. Then there are 55 other items listed for checking. These include items relating to engine, electric system, cooling system, drive shaft, rear axle, wheels, etc.

Three kinds of check marks are used to indicate if units are found okay, if any adjustments are made, and if any repairs are needed. All items marked for repair are listed on the reverse side of the sheet, with an explanation of work required. After the repairs are made, the vehicle is road tested. When repairs are completed, the sheet is signed by the mechanic who does the inspecting and by the one who does the repair work.

At the time of general inspection, carburetion is analyzed with a gas analyzer. The results of this analysis determine whether or not carburetion repairs are necessary. At this time, also, wheels are tested for alignment, and the wear on tires is

inspected. The tires are rematched at this time. The best one is placed on the right rear wheel, the next best on the left rear wheel, the next one on the right front wheel and the last one on the left front wheel. All duals are kept matched with each other.

Much attention is given to tires also at the weekly tire inflation test and the monthly greasing time. If thought necessary, they are rematched at these times rather than waiting for the general inspection period.

We have our recapping done by an expert in this line. We have about eight tires per month recapped. We have had excellent results with recaps. Some have gone as many as 20,000 miles after recapping. We do not send a tire for recapping unless the carcass is in good condition. In

two years, we have had only two recap failures due to weak sidewalls.

The proper use of oil plays a large part in our preventive maintenance routine. We had many tests made by a laboratory to determine a routine of changing oil. As a result of these tests, together with our own observations, we established the practice of changing the filter cartridges each 3000 miles or four months at the time of general inspection. At this time, we repack the filters regardless of miles or condition. We use a well known filter base, but a large type can of our own which holds two pounds of waste. We are thus able to repack a filter at an approximate cost of 20 cents for the waste. We change the oil only when it becomes contaminated or diluted. This is determined by the (TURN TO PAGE 80, PLEASE)

Form 937-231-3-43

AUTOMOTIVE EQUIPMENT
PREVENTIVE MAINTENANCE - GENERAL INSPECTION REPORT

Make _____ Model _____ Div. _____ Car No. _____

Last Inspection _____ Date _____ Mileage _____

ENGINE DATA

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Compression—Reading of each cylinder								
Cylinders—Oversized								
Pistons—Size								
Piston Rings—Make								
Piston Rings Replaced—Make								
Crank Shaft Main Bearings Gr.—Undersize								
Crank Shaft Pins Ground—Undersize								
Connecting Rod—Undersize, Renewed								

✓ if O. K. "X" = Adjustments Made "O" = Repairs Needed

Check Item	Check Item
1. Cylinder head, manifold flange nuts	31. Drag link, steering gear, tie rod ends
2. Valve adjustment	32. Wheel spindles, bolts and bushings
3. Compression—test and record	33. Front wheel suspension and mounting
4. Engine mounting bolts	34. Front end alignment
5. Exhaust leaks	
6. Gasoline line and connections	TIRE CONDITION
7. Gasoline pump; gasoline gauge	35. Right front. Left front
8. Carburetion; air fuel ratio	36. Right rear. Left rear
9. Oil leaks; damaged gaskets	37. Spare
10. Oil filter operation and condition	
11. Bearings	BRAKES
ELEC. SYSTEM, IGNITION AND WIRING	38. Fluid or air line connections
12. Distributor points; coil	39. Brake rods and toggles
13. Spark plugs	40. Propeller shaft brake
14. Timing (neon light)	41. Performance of hand and serv. brakes
15. Generator charging rate	42. Brake bands. Brake drums
16. Starter, switch and relay	CLUTCH AND TRANSMISSION
17. Battery, cable and terminals	43. Clutch pedal clearance
18. Lights, horn, etc.	44. Clutch grab or noisy, or slip
19. Wiring and connections	45. Trans. noisy 1-2-3-4-5 speed
COOLING SYSTEM	46. Trans. mountings
20. Fan belt. Temp. gauge. Thermostat	BODY AND CHASSIS
21. Water pump. Hose and connections	47. Doors, hinges and hardware
22. Radiator leaks, dirty or clogged	48. Glass. Operations of windows
23. Radiator tie down bolts and rods	49. Operation of all keys and locks
DRIVE SHAFT, REAR AXLE AND WHEELS	50. Body bolts. Squeaks
24. Propeller shaft. Universal joints	51. Fenders and splash aprons
25. Noise on pull or coast	52. Body leaks
26. Back-lash	53. Bumper bolts and tire brackets
27. Shackles. Snubbers U-bolts	54. Floor mats and upholstery
28. Spring. Clips	55. Special equipment
29. End play in axle shafts	
30. Front wheel bearings	
31. Rims. Hubs and bolts	

ROAD TEST VEHICLE AFTER ABOVE WORK IS COMPLETED.

O. K. _____ Mechanic _____

Time taken for above _____ Hrs. O. K. _____ Inspector _____

Note: List items marked "O" needing repair on other side, with explanation.

Young Horsepower for old motors



● Keep your horsepower keen, keep your motors clean—with Casite. Clean motors run better, last longer and use less fuel. That's why hundreds of fleets use Casite in every motor *all* the time.

Casite will give you the same satisfying benefits. Start using it today.

THE CASITE CORPORATION • HASTINGS, MICH.

- Quickly cleans out harmful sludge deposits from vital areas.
- Retards the formation of engine varnish.
- Frees sticking valves and rings.
- Carries oil to close tolerance parts.
- Gives easier starting—in any weather.

THE CASITE CORPORATION • HASTINGS, MICHIGAN

GUARANTEED AS USUAL

*Smoother and Better Performance
or Double Your Money Back*

GUARANTEE

Add Casite to crankcase and run through carburetor according to instructions, then drive your car 100 miles or for 60 days, whichever is first. If not convinced that Casite gives you better and smoother performance, you get double your money back by filling out guarantee certificate and mailing it to The Casite Corporation, Hastings, Michigan. Maximum refund is \$1.30 per pint, twice the nationally advertised price of Casite.



CLEANS OUT MOTORS • KEEPS MOTORS CLEAN

MANY CHECKS CHECK BIG REPAIRS

(CONTINUED FROM PAGE 78)

looks of the oil and by previous experience.

Each unit is painted once a year, at the same time as one of the general inspections. This painting is done with clear enamel over the regular paint job. It keeps the vehicles shining all the time as well as preserving the paint.

In addition to its other advantages, the use of clear enamel is a great time saver. Our trucks are painted in two colors. Without the use of the clear enamel, the entire paint job would have to be done frequently. Each time it would take a day for each of the two colors and another day for the lettering and striping. The vehicle would thus be held up from operation for three days, while by using the enamel over the paint job, it is held up only 24 hours. Barring an accident which would de-

stroy or mar the original paint, by using clear enamel once a year, the vehicle should go its entire life of from seven to ten years without another regular paint job.

The oil has a lot to do with overhauls of the units. We overhaul them whenever one uses as much as three quarts of oil in 500 miles of operation. At present, our average overhaul job is done after about 40,000 miles of operation when the crankcases are disassembled. Previous to using our preventive maintenance program, we took down the crankcases at about 25,000 miles to inspect the oil screen for stoppages. Due to our present system of oil changes, and the use of oil inhibitors, we are quite sure that the oil screen is open at the end of 40,000 to 45,000 miles when the unit will be taken down for a new ring job.

The frequent general inspections, and thorough repair work done as a result of them, save us much time when a general overhaul is made.

For scheduling the units for general inspection, we use a quick reference sheet, which is placed beneath a glass on my desk. This sheet is typewritten. Several columns are used with the date at the top, and, beneath, the numbers of the units due for inspection at about this date. When the inspection is completed, a red mark is placed beside it, and the truck number carried forward to the next date of inspection.

Whenever I am in the office, I tell the mechanics personally on what vehicles to start inspection. At night, and whenever else I am absent, I leave instructions on a desk calendar as to what units should be worked on, with the name of the mechanic assigned to each. It is always understood that when a truck comes in with a driver's report of work necessary to be done, this work takes precedence over anything else regardless of what inspection work has been assigned.

Perhaps one of the greatest features of our preventive maintenance system is the use of charts which show all the different inspections of each individual units for a period of two years or more. These charts are large sheets put out by General Motors Truck; their form GMT 811. They are mounted on a swinging wall fixture, shown in the photo-

(TURN TO PAGE 82, PLEASE)



WHETHER used as original equipment, for re-equipping or replacement, the ruggedness, strength and durability, Hansen Body Hardware lasts longer and cuts maintenance and renewal costs.

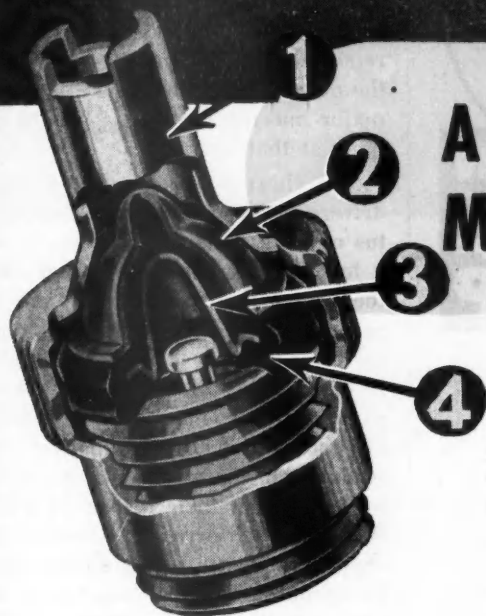
Built to withstand the severe usage of commercial body service, and thoroly tested on all types of bodies, trailers and tanks, Hansen Hardware maintains its reputation for quality and its record of sustained performance.

If you are designing, building or having built new body equipment, or are converting or overhauling used units, weigh carefully the advantages in favor of Hansen and use it for all-round satisfaction and service. Most all tank units and the majority of custom-built bodies and trailers are Hansen-equipped.

If you do not already have one, send for a copy of our latest catalog showing the Hansen line of Hardware and one-hand automatic Tackers.

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.





A TWIST OF YOUR FINGERS— MAKES A TON-TIGHT* SEAL

SCHRADER FEATURES

1. Valve Cap body or shell.
2. Brass Swivel Plate allows Cap Shell to turn independently of rubber washer as Cap is applied. This assures proper seating of washer and prevents distortion.
3. Brass Dome-Shaped Plate provides an indestructible chamber for safe clearance of valve core pin.
4. Molded Rubber Washer seals valve mouth when Cap is screwed on firmly by hand; while rubber between brass plates 2 and 3 provides spring action to maintain positive seal.

LOSS of air pressure in the tires of your fleet, means excessive tire wear and increased operating costs. To offset any air loss through the valve, make sure that every tire valve in your fleet is equipped with a Schrader Tire Valve Cap.

The Cap screwed down finger-tight, sets up a pressure equivalent to 2,000 lbs. per square inch *on the contact area* between the cap washer and the valve mouth. This pressure seals the valve. Air can't get out. Dirt can't get in. This pressure also anchors the cap. No amount of vibration can loosen it. It cannot work off.

For lower fleet operating costs there are two things to do. First: Install Schrader Tire Valve Caps on every tire. Second: Whenever you check tire pressures be sure to *replace* the tire valve caps.

*When a Schrader Sealing Valve Cap is tightened with full finger strength, a downward force of about 50 pounds is exerted against the top of valve mouth. The actual effective contact surface between cap washer and valve mouth is about 1/40 of a square inch. Multiplying 50 pounds by 40, gives the equivalent per-square-inch pressure—2,000 pounds.

Schrader

REG. U.S. PAT. OFF.
CONTROLS THE AIR



SCHRADER TIRE VALVE CAPS

Guaranteed Air-Tight Up to 250 Pounds Pressure

A: SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, BROOKLYN, NEW YORK

MAY, 1944

Use postage-paid card inserted in this issue for free information on advertised products

81

MANY CHECKS CHECK BIG REPAIRS

(CONTINUED FROM PAGE 80)

graph in Fig. 1, and easily accessible at all times.

While the General Motors form is used, we do not follow the standard method prescribed by them for its use but have had the form adapted to our own use by Jack North, engineer connected with Commonwealth Southern.

In the first column of this chart, the numbers of the vehicles, the make and the model are noted. At the right of the block for each such vehicle is a succession of square blocks for record of inspections and work done. As shown in Fig. 1, each block is divided vertically into two equal spaces. The left-hand space is subdivided into four sections. At the top is a section for the date. Just below this is a section to record accidents or to record major units installed, as water pump, generator, etc. Below

this are two triangular spaces, the upper one for general inspection or motor tune-up and the lower one for greasing.

The right-hand section is divided into three sections. At the top is one where the mileage is recorded. Below this is one to indicate by code the particular kind of major mechanical work done. Below this is a small section to indicate oil filter repacking and oil changes.

To make all information plain at a glance, the section for accidents is colored solidly in red, that for major unit installations in blue, that for greasing in black, that for general inspection or engine tune-up in yellow, that for oil changes in green, and that for filter repacking in orange. The spaces for date, mileage and particular work done are not colored; the required information is written in. This information for major work done is taken, as a usual thing, from the general inspection report form, or it may be taken from the driver's daily report in case some major mechanical work has to be done at that time.

The chart is always accessible to drivers and represents the exact status of work done on vehicles. It has a tendency to keep drivers on their toes to prevent accidents, and to compare his record with that of other drivers. He can tell how he stands in comparison with other drivers by comparing the number of accidents of each, and by comparing the amount and kind of major repair work done on their respective units. We encourage drivers to look at the charts frequently, as it shows them by comparison how long each car can go without such things as brake work, clutch work, etc. It thus makes a friendly competition between drivers to keep their repairs at a minimum.

We have a safety program, with awards, and the chart fits right into the picture. The safety program encourages drivers to take the best care of their vehicles and the chart, while not used expressly for this purpose, shows them in a large measure just where they stand in the safety program. Its principal purpose is, of course, to provide a visual record at all times of just what inspections, greasing, oil changes, repairs, etc., have been done, and when each ve-

(TURN TO PAGE 84, PLEASE)

A BETTER PUMP for all 'round PUMPING JOBS

**SELF-PRIMING
SELF-DRAINING
FAST-PUMPING
BIG CAPACITY
LONG LIFE**



NEW EFFICIENCY, DURABILITY and ADAPTABILITY in an ALL-PURPOSE pump have been achieved in the BISHMAN NO. 700—by utilizing the diaphragm principle long tested and proved in auto fuel pumps. No rotating parts or leathers to stick or leak. No cylinders, pistons or rings to wear. Not affected by dirt, moisture, condensation, rust or weather conditions. SELF-DRAINING—automatic drain back, no waste.

PUMPS MANY LIQUIDS—anti-freeze—alcohols—paint thinners—gasoline—motor oils—kerosene—fuel oil—water—crude oil—sprays, etc.

SCREWS DIRECTLY INTO DRUM—fits both 2" and 1½" standard pipe thread openings—no bushings. Fitted with adjustable suction pipe for 15 to 60 gal. drums. Special pipe for ¾" openings.

BUILT FOR LONG SERVICE—finest materials and workmanship—diaphragm shock absorber prevents strain and damage—perfect-fitting ground valve seats of brass and rubber.

ASK YOUR JOBBER . . . Or Write Us

BISHMAN MFG. CO., 1101 South 2nd Street, Minneapolis 15, Minnesota.



FROM THE SMALL CYLINDERS
FOR AIRPLANE ENGINES

TO THE GIANT LINERS OF
BIG MARINE DIESELS

Something new has been added to engine cylinders . . . a new process to lengthen cylinder life and give the engine greater reliability . . . more hours of continuous operation.

PORUS-KROME, applied to cylinder bores by the Van der Horst process, multiplies cylinder life 4 to 20 times, ring life 3 to 5 times, and reduces the risk of piston seizure.

PORUS-KROME isn't anything like the chromium most people know, decorative chromium, except that both are chromium. It is 250 to 750 times thicker than decorative chromium and isn't bright and beautiful because it is a bearing surface and contains thousands of tiny pores or pockets which retain lubricating oil.

The application of PORUS-KROME varies because every engine is different and has its own characteristics of operating conditions and wear experience. The Van der Horst process begins with a study of wear rates, service requirements, etc., which form the basis for the specification of the work to be done.

Our engineers are ready to make this preliminary study with your engineers at your convenience. In this way, you can have the facts before you when deciding on improvements to be made in your postwar engines.



PORUS - KROME

Multiplies Engine Life

VAN DER HORST CORPORATION OF AMERICA

CLEVELAND 11 • OHIO
CLEAN • NEW YORK

AN AFFILIATE OF DRESSER INDUSTRIES

MANY CHECKS CHECK BIG REPAIRS

(CONTINUED FROM PAGE 82)

hicle is due for similar treatment in the future.

As each sheet has records from two to six years, it is possible to check back for a long time on just what treatment each vehicle has received. With the charts furnishing a visual reminder of future work to be done, and when, there is but little

likelihood of anything necessary being omitted or delayed.

In addition to the records mentioned, we keep card records of three items for quick reference. One card has a record of all major repairs done during the year on all units. The cards give the unit numbers on which work was done, their mileage, the date work was done, the condition of the oil screen, the parts used and their cost.

Another card has a record of repairs to clutches, transmissions and

rear ends. These records show the vehicle numbers, mileage, date work was done, parts used and cost of parts.

A third card is used to record paint jobs done and show unit numbers, date of painting, and cost of job.

The information on these cards, of course, is available on the general inspection reports, but, by use of the cards, the information is more quickly available than by looking up the filed reports. In other words, their use is a short-cut and we use all the short-cuts we can to save time and labor.

Cost of Operation

Normally, we replace at least 10 units each year with new ones. We have not been able to do this for the past three years, so we have to keep all the old trucks running. This condition makes it difficult to make any definite comparison of cost per mile of operation from year to year.

Our cost per mile of operation for 1943 was 6.98 cents for combined light and heavy units. While this cost may seem high, in reality it is not high when the generous amount of depreciation, which we have figured in this cost, and when the saving of cost of at least 10 new cars is taken into consideration.

It must also be remembered that vehicles which have been subject to a preventive maintenance program from the time they were new will run at a much lower cost per mile than those which were old when the system was put into operation. We feel certain that if we had not established our preventive maintenance program even at the late time we did, most of our units would not now be in a condition to run.

We have had some criticism that our system of preventive maintenance and the keeping of the chart records takes too much time. As a matter of fact, if everything is done according to schedule, and the records made at the proper time, it does not take long and the results achieved would be profitable even if it took much longer.

Preventive maintenance is just what one makes it. If one goes into it half-heartedly, the results secured will be in proportion to the efforts made and will not be satisfactory.

END

(Please resume your reading on P. 58)



CENTRAL UNIVERSAL HOSE CLAMPS

IN

Action!

• Army and Navy combat vehicles, farm and road-building machinery, diesel and gasoline engines, and all types of radiator hose are equipped and serviced with Central Universal Hose Clamps.

It's the clamp-power of Central Universal Hose Clamps that keeps the Army "Ducks" watertight and in action on land and water!

Made of extra-heavy rolled steel, the Universal is powerful enough to withstand abnormal pressure, stress and vibration. It is rustproof, leakproof, self-locking, 100% universal, and easy to use in hard-to-get-at places.

Standard for all service needs, it can be quickly installed or removed without disconnecting the line.



CENTRAL EQUIPMENT CO.

900 SO. WABASH AVE., CHICAGO 5, ILL.



A SINGLE LENGTH UNIVERSAL CLAMP FITS HUNDREDS OF DIAMETER SIZES

QUIZ ANSWERS

CCJ Quiz on page 72

1. a. At your Studebaker dealer. This booklet, a companion piece to Studebaker's "Care and Maintenance of the Farm Truck in Wartime," contains a complete text of ODT Order No. 17 plus interpretations and information on delivery regulations.

2. d. Because of the metal shortage, Idaho has discarded plates entirely and has provided "licenseals," one for the windshield and one for the back window.

3. c. Vaniman now has the position of Vice-President in charge of Exports for Fruehauf Trailer Co. Prior to WPB, he was South African sales representative for Chrysler Corp.

4. d. Last year, our lend-lease shipments of trucks to Russia totaled approximately 173,000, which was about one out of every four trucks produced here during the year. This was in addition to 86,500 trucks shipped to the Soviets in 1942. The U. S. Government also shipped the machinery to equip a complete tire factory with a capacity of 1,000,000 military truck tires annually.

5. c. 500,000. With a division of troops ranging between 12,000 and 22,000 men, that would be about the equivalent of somewhere around 30 divisions in the U. S. Army. Nearest industrial organizations to GMC are the Bell Telephone System which had 439,200 employees and U. S. Steel which had 340,498 employees. 115,000 of GMC's total were women.

6. a. A detergent is a chemical that cleans, loosens dirt. In detergent oils, contaminants such as soot, carbon, fuel residues, road dust and dirt are prevented from concentrating or coagulating, as they do in regular lubricating oil.

7. a. Brig. Gen. Charles D. Young, U. S. Army, retired. He had been deputy director of the ODT since January, 1943, and was in charge of that body while Mr. Eastman was endeavoring to regain his health. Gen. Young served with the Army Transportation Corps in World War I.

8. c. 26 years old. Henry Ford II was a lieutenant in the U. S. Navy, but was released from active duty in order to resume his job of learning how to run the Ford empire.

9. d. Certificates of War Necessity now have no expiration date. They

do not expire until revoked, suspended or canceled.

10. a. 1.4 trucks. Based on figures tabulated by the ODT, Certificates of War Necessity covering 4,635,000 trucks and truck-tractors had been issued up to Oct. 1, 1943, to about 3,267,000 certificate holders. This would indicate that there are less than $1\frac{1}{2}$ trucks to each certificate holder.

Professor's Wearing a Dunce Cap

Back in the March Quiz, we led

you to believe that truck operators in Australia used a heavier oil in winter than in summer, because winter there meant warmer weather. We would have gotten away with it, too, except that W. C. Robinson of the State Department of Roads and Irrigation, Lincoln, Neb., spotted the "boner" immediately. Winter is the cold season of the year, regardless of the calendar months, so in the winter months of June, July, and August in Australia it's best to use a lighter oil. —R. F. B.

Exchange

★ Ford Distributors
and
★ Voltage Regulators

for

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UNITS REBUILT by

Through
YOUR
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and Help YOUR
GOVERNMENT
Conserve
Critical Materials

QUALITY WORKMANSHIP GUARANTEED

Distributors are completely disassembled and worn parts replaced with highest quality materials. Correct adjustment of contact points and timing screw, incorporating a running test with precision instruments, insures peak car performance.

Voltage regulators are thoroughly reconditioned, accurately adjusted on precision instruments and are ready to install. Contacts are resurfaced or replaced—windings are checked for shorts and open circuits—every unit is made to perform like new.

Ask your Jobber's salesman or write for our Exchange Plan Today.

REBUILDING DIVISION

C. E. NIEHOFF & CO - 4925 LAWRENCE AVE. CHICAGO 30, ILL.

BRANCH: 1342 S. Flower Street, Los Angeles 15, Calif.




METAL SPRAYING IS PAYING

(CONTINUED FROM PAGE 62)

plied without subsequent machining requires metallizing.

When, however, a job is adaptable to either process, nine times out of ten it can be accomplished more quickly and more economically with a metallizing gun. This is particularly true of build-up jobs on crankshafts, bearing surfaces, journals,

press fit bushing housings, brake drums, etc. Several factors are involved in each instance that are decidedly in favor of the metal spraying process.

Precision parts that require strict alignment such as axle and drive shafts, crankshafts, and camshafts can have worn surfaces repaired by fusing weld metal to the surface then machining to size. In such work the build up must be at least one-quarter inch in excess of finished dimensions due to the irregular surface of the

fused weld metal. Moreover, such parts usually require preheating prior to welding, and must be straightened after welding due to warpage caused by the heat of the welding flame. The entire process involves two machine set-ups, a preheat job, a welding job, and a straightening job.

Building up the above parts by metallizing is a much simpler process. A single machine set-up is all that is required. Rough threading for surface preparation, spraying, and finish machining or grinding can be accomplished without removing the part from the lathe. No straightening will be required as the temperature involved in metal spraying seldom exceeds 200 deg. Fahr. The danger of crystallization and internal stress is eliminated due to this absence of heat. The total build-up will have to be but a few thousandths of an inch in excess of finished dimensions. Reliable records prove that the average time involved is approximately 40 per cent of that required for build-up by welding. An additional saving is realized when it is remembered that rolling stock tied up for want of repair will be back on the road 60 per cent sooner.

As to actual labor and material involved in either process, an unbiased analysis of four identical test jobs gave the following results:

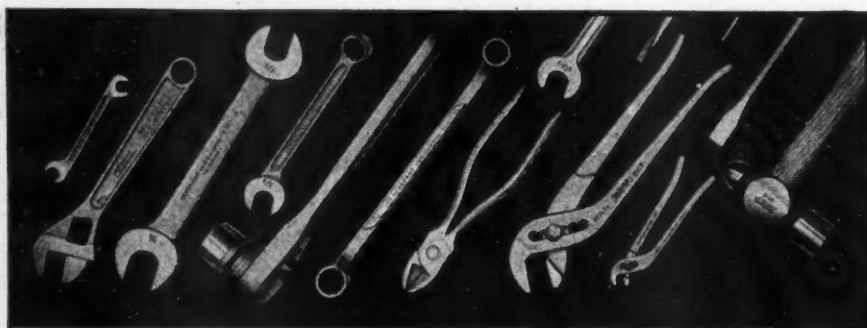
Method	Material	Total Cost
Arc welding.....	Low-carbon steel.....	\$1.79
Metal Spray.....	Low-carbon steel.....	\$0.952
Acetylene welding.....	Tobin Bronze.....	\$3.02
Metal Spray.....	Tobin Bronze.....	\$1.26

The above jobs were all accomplished in the same shop, by workmen skilled in the processes employed, and all were finished to the same tolerance requirements. The savings indicated do not include shop overhead, supervision, nor the inherent value of returning inoperative equipment to service at a substantial saving in time.

Other jobs than mentioned above, such as restoring press fits, rebuilding pistons or cylinder walls, coating piston heads with aluminum to dissipate heat, rebuilding bearing surfaces, etc., need no comparison with welding as the advantages of metallizing in such instances are obvious.

Personnel Skill Requirements

To the uninitiated there is a certain (TURN TO PAGE 90, PLEASE)



Unexcelled since 1881 HERBRAND TOOLS Are Working for Victory!

Men and women who make and maintain our fighting equipment are making good use of Herbrand Tools to speed up Victory.

Like thousands and thousands of automotive mechanics, these people *know* the value of the advanced design, uniformly high quality and superior workmanship built into these tools—and are making the most with what they have at hand.

Should there be an occasion when you are unable to get immediate delivery on certain numbers in our complete line—please understand that war needs come first. Herbrand Quality Tools are *worth waiting for*.

Sold through better jobbers everywhere

THE HERBRAND CORPORATION • Fremont, Ohio
Drop-Forged Tools Since 1881

This announcement also appears in April 29, 1944, Saturday Evening Post. Engineering data is available to authorized persons and companies upon request.



Gasoline Injection

MORE POWER FOR THE WORLD OF TODAY AND TOMORROW

In 1944 gasoline engines enter a new phase of progress as builders start to use American Bosch Gasoline Injection. You will hear of it again and again as we progress through Victory to the world of tomorrow.

WHAT IT IS . . . Briefly—an entirely new and different way of supplying fuel to the cylinders of a gasoline engine.

Important? Yes! Leading engineers knew that it was but a matter of time before a better fuel distribution system would become a practical reality—a system that would increase efficiency and bring extra safety.

There was a clue! Diesel engines, in their specialized way, offered high efficiency, responsiveness, safety. Would the Diesel

method of injecting fuel directly into the cylinders be practicable for gasoline engines?

American Bosch knew gasoline engines from years of experience in building ignition equipment. American Bosch knew Diesels. They had engineered and built Fuel Injection Equipment for the American Diesel industry from the inception of high-speed engines.

So American Bosch engineers co-ordinated their own fund of gasoline and Diesel engine knowledge with that of forward-looking engine builders. Test installations followed. They proved a success. Gasoline Injection is today a reality.

WHAT IT DOES . . . Greater, Smoother Power. Now, the fuel is delivered uniformly to every cylinder. The result—all cylinders "pull" together in perfect harmony. And because the fuel is vaporized mechanically, all fuels, even

lower grades, burn more efficiently, deliver a greater percentage of their potential power in the form of useful energy.

Greater Responsiveness. The engine responds without time lag, accelerates smoothly and performs more surely under any and all conditions.

Safety from the fire hazard of an explosive mixture in the induction system. Backfires become harmless—because all combustible mixtures are confined within the engine cylinders.

It's here—*Gasoline Injection*. Its benefits will be yours—for convenience, economy and pleasure—after Victory.

★ ★ ★

AMERICAN BOSCH CORPORATION
Springfield, Massachusetts

AMERICAN BOSCH

PIONEER BUILDERS OF GASOLINE INJECTION IN AMERICA

METAL SPRAYING IS PAYING

(CONTINUED FROM PAGE 88)

tain semblance between the metallizing and welding processes. At first glance this is a logical conclusion. Both processes employ heat as a means of adding one metal to another. However, closer observation will reveal that at this point all resemblance ceases.

Because of this confusion when the question of personnel skill requirements for metallizing is broached, those not familiar with the process will think immediately of the long and costly apprenticeship required of a welder. Such apprehension can be discarded immediately. Fundamentally, the skillful manipulation of a metallizing gun is very simple. The author is aware of several specific instances where men who had never handled a metallizing gun before were able to turn out acceptable work

after an hour or two of instruction and practice.

Metallizing equipment can be installed and used in any shop employing mechanically skilled men without addition of specialized personnel. This is due to the almost automatic nature of the process components employed in completing a metallizing job. Surface preparation, either by rough threading or sand blasting requires a minimum of skill. Anyone familiar with a lathe can cut a rough thread by the simple process of following directions given in a metallizing manual. Actual application of the metal spray requires of the operator only the ability to recognize a neutral melting flame, a knowledge of how far to hold the gun from the part or surface being sprayed, and the speed at which the work must progress to prevent an undue rise in temperature. Beyond these requirements the gun is automatic in operation, and, if adjusted according to directions, will produce good results.

The one element in a metallizing job that demands skill is the final finishing of a sprayed part to very close tolerances. Most repair shops, however, already employ skilled machinists, and as finish machining or finish grinding of a metallized part requires no specialized knowledge, additional personnel will not be needed.

The major bonus derived from an operator long skilled in the use of metallizing equipment is his ability to recognize certain money-saving applications of the process that a novice might ignore. Such a facility will develop rapidly in any man interested in the job.

Value of Process

In analyzing metallizing costs in relation to the value of parts reclaimed, several specific factors are involved. Three such important factors are:

1. Inherent value of reclaiming worn parts that cannot be replaced due to war conditions.
2. The established fact that a metallized wearing surface will outwear the original component.
3. Low cost of the process in relation to cost of replacing the part.

The parent companies of most automobiles and trucks on the road today have re-tooled and are busily
(TURN TO PAGE 92, PLEASE)

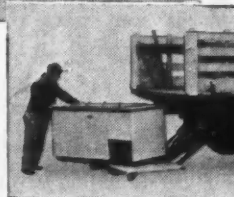
ANTHONY HYDRAULIC "TAILGATE LOADER" CAPACITIES 750 LBS. TO 1500 LBS. ONE MAN NOW DOES THE WORK OF THREE

Old Way-Requires 3 Men

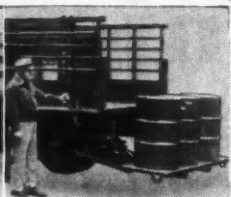


QUICKLY-EASILY MOUNTED ON
TRUCKS NOW IN SERVICE
OR ON NEW TRUCKS

- ★ SOLVES MANPOWER SHORTAGE
- ★ CAN PAY FOR ITSELF IN 30 DAYS



One man slides heavy cooler onto lowered tailgate.



One man operates lever to raise 3 heavy drums.



One man easily handles barrels raised flush with floor

NEW WAY with TAILGATE LOADER

- ★ SAVES MANPOWER! One man now does what three or more formerly did.
- ★ CUTS LOADING AND UNLOADING TIME! Trucks are loaded and unloaded faster — keeps them on the move.
- ★ REDUCES PERSONNEL ACCIDENTS! Loads are lifted to body or lowered to ground by powerful hydraulic hoist mechanism controlled by one convenient lever.
- ★ REDUCES ACCIDENTAL DAMAGE TO VALUABLE MERCHANDISE!

No skids, chains or cables to break or slip.
Minimizes your damage losses.

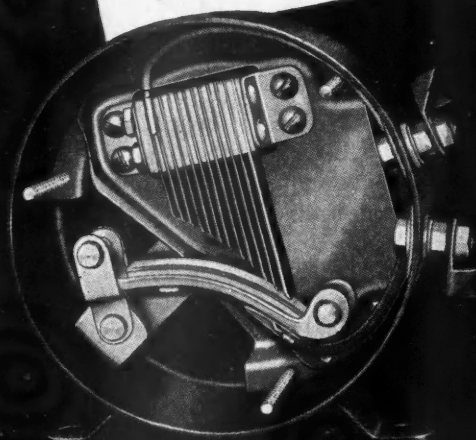
ANTHONY'S ZB PLATFORM HOIST — Makes inexpensive dump body out of platform, stake or grain body.

ANTHONY COMPANY, INC.
STREATOR, ILLINOIS



The low price will surprise you. Write or wire for complete information. — Address: Department D-22

CONTROLLED SPEED — and Power of Braking Action with WARNER ELECTRIC BRAKES



Controller, with cover removed
— operated from driver's seat
— a simple, effortless, instantly
effective brake control.



Controller is mounted on the
under side of steering wheel.

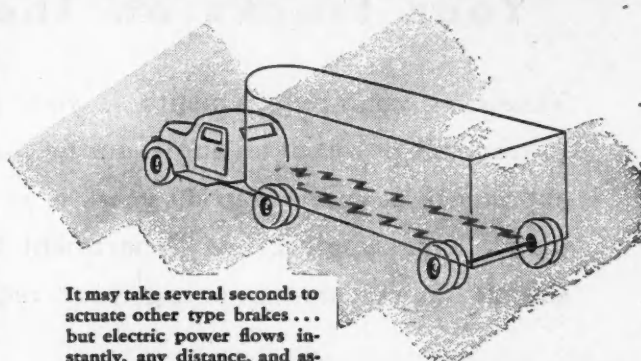
Positive Control — Driver has complete control at all times. Any degree of braking power may be applied instantly, without effort. A rheostat in the controller regulates flow of current to brakes, thus governing the speed and power with which the trailer is stopped.

Instant Brake Action...No Time-Lag

With ideal road conditions, if your truck is traveling at a speed of 20 miles per hour, the distance required to stop is 30 feet. This distance is increased 29 feet each second of time-lag between the time the brake is applied and the time the vehicle stops. The further the rear wheels are from the driver's seat, the greater the time-lag, and the more distance needed for stopping.

With other type brakes there is serious time-lag but with WARNER ELECTRIC BRAKES there is *no* time-lag. The electric braking power, applied in any desired amount at the controller on steering wheel, travels instantly to the wheel brakes and regardless of whether the rear wheels are 10 feet or 100 feet back from driver's seat, instant braking is certain...you can *depend* on a smooth 30-foot stop from a speed of 20 miles per hour.

At the present time the needs of our armed forces must be served first. However, if you are in the "essential" category, we can arrange to furnish Warner Electric Brakes.



It may take several seconds to
actuate other type brakes...
but electric power flows in-
stantly, any distance, and as-
sures instant braking.

WARNER

ELECTRIC BRAKES

WARNER ELECTRIC BRAKE MANUFACTURING COMPANY, BELOIT, WISCONSIN

METAL SPRAYING IS PAYING

(CONTINUED FROM PAGE 90)

engaged in the war effort. The same is true of the many auto parts companies formerly engaged in the manufacture of duplicate standard repair units. In most cases the cushion stock of such standard repair units is badly depleted. The facilities for refurbishing the stock, or for manufacturing specialties, is non-existent.

This tendency of American industry to "lean over backwards" may not be sound economics, but arguing the point will not replace a worn crankshaft in a truck.

Due to the emergency conditions mentioned above, the money-value of being able to salvage and return to use parts that cannot be replaced is difficult to compute. Today, thousands of worn parts are being rebuilt and returned to service via the metallizing route. Without such facilities, lost time while the markets were

being searched for replacement units would run into a staggering figure. Now more than ever before hundreds of repair shops are finding their metallizing equipment an indispensable unit of their service to customers.

A question always broached by a prospective user of metallizing equipment is, "Will a metal sprayed part wear? It costs money to tear the crankshaft out of a truck and replace it. If new parts are available, isn't it cheaper in the long run to install them?"

There is a definite answer. It has been proved by a legion of controlled tests and actual service records that a metal sprayed surface will outwear solid metal of the same composition. There is a simple metallurgical explanation to support this fact.

Because of the almost instantaneous quenching of the atomized metal as it strikes the surface against which it is being sprayed, a very hard individual particle results. Secondly, metal sprayed particles, when they harden, do not conform exactly with each other. The above two characteristics result in an extremely hard, porous coating. In fact, .10 carbon steel will assume a Brinell hardness number analogous to .40 carbon steel after it is sprayed.

This hardness factor, coupled with the porous characteristics of a metal sprayed coating and the ability of the pores to absorb and retain lubricant much like a sintered bearing, explains why a metal sprayed surface is highly resistant to abrasion and wear. Also, the absorbed lubricant in the bearing (approximately 10 per cent by weight in a sprayed steel bearing) is insurance against seizure and galling when regular sources of lubrication are cut off for a time. This is especially important when it is remembered that a stationary bearing under static load almost always ruptures the lubricating film and must complete several revolutions before oil pressure restores the protective film.

Harry Shaw, a prominent consulting engineer, in a paper delivered before a college of technology at Manchester, England, gave the results of a test between standard shafting and shafting built up by the metallizing process. Twenty-two new crankshafts were selected. Of these, 11 were installed in the new condition,

(TURN TO PAGE 94, PLEASE)



SPECIFY Blood Brothers Universal Joints to Keep Your Trucks on the Job....

Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

Takes Power
Around Corners



Backed by
Over 30 Years
Factory and Field
Experience

Blood Brothers UNIVERSAL JOINTS

MANUFACTURED BY

BLOOD BROTHERS MACHINE COMPANY
Division of Standard Steel Spring Company • ALLEGAN, MICHIGAN

REFUELERS

demonstrate versatility of Heil engineering and production facilities

and assure you of a successful solution of your post-war aircraft-refueling problems

World-wide experience with practically every type of refueling equipment which has ever been built — dating back to the pioneering days of aviation — has given the Heil organization a wealth of background which is available to you.

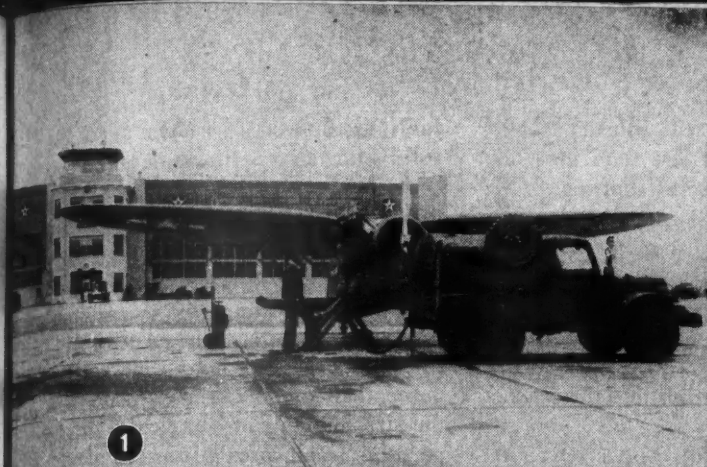
Airline, airport, and oil company engineers are invited to collaborate in the development of specialized equipment to meet specific needs.

Write today for further information. T-92A

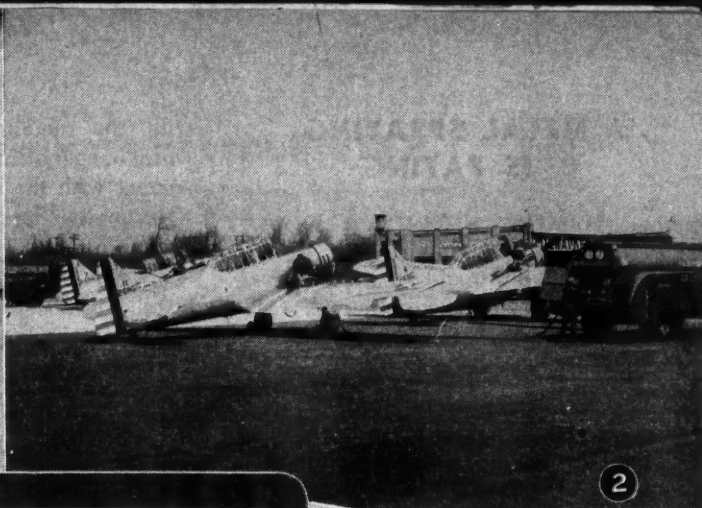
THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

1. Cold weather 150 gal. lube oil unit.
2. 2000 gal. type F-2 refueler.
3. One of the first Heil army refuelers.
4. 750 gal. F-3 refueler for advance combat areas.
5. 1400 gal. Navy fuel and oil servicing unit.
6. 4000 gal. type F-2A refueling trailer train.



1



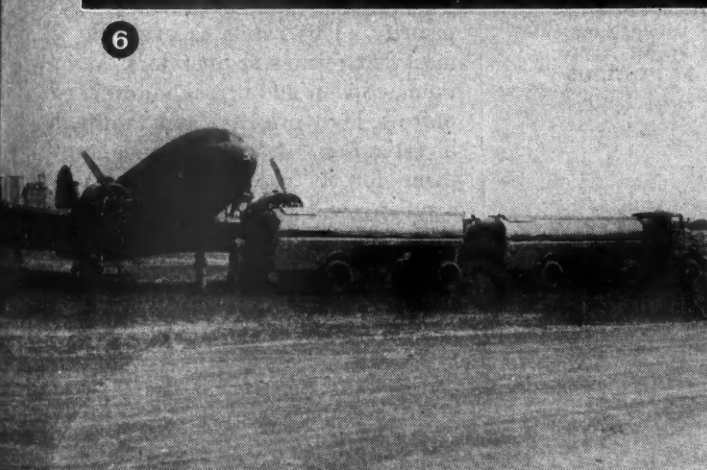
2



3



4



6



5

METAL SPRAYING IS PAYING

(CONTINUED FROM PAGE 92)

and 11 cut down and rebuilt by metal spraying before installation. All were in trucks of like manufacture, and all doing the same type of hauling. After 50,000 miles of service, all shafts were removed and measured. The metallized journals were worn 50 per cent less than the solid journals. The bearings in contact

with the metallized journals were worn 55 per cent less than those in contact with the solid shafting.

In another test a metallized crankshaft was fully impregnated by soaking in hot oil. The shaft was then installed and ran continuously for 22 hours without additional oil before seizure occurred.

A large transportation service organization in New York City reports 150,000 miles on a crankshaft with several metallized journals, and at the end of the period the metallized

journals showed less wear than the solid journals on the same shaft.

As to the actual cost of rebuilding by metallizing in comparison with new costs, the author is glad to have at hand many authentic reports from large users of the process. Due to limitations of space, however, only a few will be given here. The actual percentage of saving will vary with the size, shape, and complexity of the part, but in all cases a substantial saving will be noted.

	New Cost	Cost of Spraying
3, Ford dump box roller cross shafts	25.00	4.25
2, Armature shaft bearings	10.00	3.00
1, Baker electric truck shaft	27.50	4.75
3, Generator armatures	6.00	2.00
1, Clarkshift transmission case	37.50	2.00
2, 2-in. shafts	2.50	1.25
5, Eccentric shafts	375.00	6.75
	\$483.50	\$22.00

Average Net Saving—95 Per Cent (Approx.)

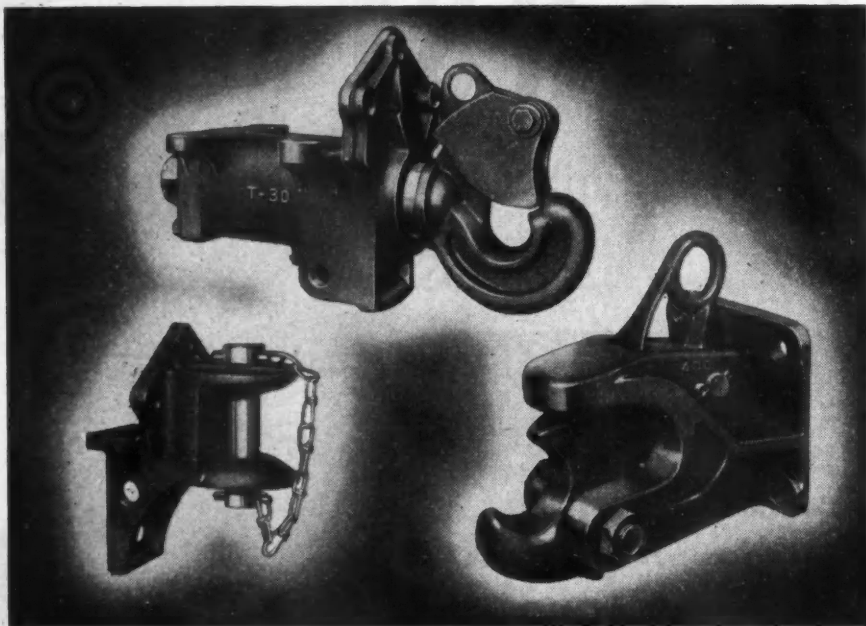
When the above actual saving is coupled with another derived from the fact that a metallized part will usually outwear a new part, this impressive figure is substantially increased. In addition, it is to be remembered that replacement of some of the above parts at this time would be a slow and very uncertain undertaking. The above cost of spraying includes surface preparation, metallizing, and machining only. It is considered the cost of removing and replacing the part on the truck would be equal with either new or rebuilt units.

Priority Required

The latest information available to the author reveals that fleet owners would have no trouble in securing the metallizing wire most commonly employed in repair and maintenance work. There are ample supplies of all carbon steels, Tufton steel, and Swedes iron. Babbit and lead are also available. Monel, nickel, stainless steel, commercial bronze, tin and zinc, when used for repair purposes, require an A-10 under order P-22 priority. This rating is available to most fleet owners or operators. Aluminum, copper, and brass, however, require a high priority, and thorough investigation should precede any plans for its use. Any metallizing company will be glad to furnish information relative to the latest priority requirements.

END

(Please resume your reading on P. 64)



NEW Double Acting Pintle Hooks Automatic Industrial Couplers Solid Couplers for Trucks & Trailers

Write for detailed specifications of the complete Holland line.

All types for all purposes—engineered for smooth, efficient performance, with many special features that make the Holland line preferred by experienced truck and trailer fleet operators. Whatever your needs in pintle hooks, couplers, bars, or hitches, come to Holland with your problems;—you'll find the right product for the right spot.

Made by the makers of Famous Holland fifth wheels and landing gears.

ENGINEERED BY

HOLLAND HITCH COMPANY

HOLLAND, MICHIGAN, U. S. A.

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 47)

shoes down to the breaker strip before replacing them. Therefore, the rubber on our vehicles was in pretty good shape. And we have done, and still are doing, our best to get maximum mileage out of it.

While local ration authorities have been generous with new tubes and recaps, so far we have been unable to secure any outright tire replacements—even used casings. When a tire blows out, we cannot replace it.

Our experience, and that of other fleet owners with whom we have checked, points up consistently governed speed and proper air pressures, as the key secrets of tire conservation. By proper air pressures, we mean the adjustment of pressures to the loads carried. Of course, there are other factors essential to prolonging tire life, but these items impress us as most important, especially in the operation of recaps. With respect to the latter, one should keep uppermost in mind the fact that they are *used* tires. The danger zone, to be constantly watched, is the bond line between the cap and the sidewall. It is at this point that the effects of excessive speed and underinflation show up first.

Our formula for the adjustment of air pressure to load is that a 20 per cent overload rates a 5-lb. increase over manufacturer's recommendation. For instance, a tire carrying a 70 lb. pressure recommendation is inflated to 75 lb., if the overload runs 20 per cent or even close to it.

One of the principal tricks, as we see it, in getting full mileage out of a tire tread is to put as much of the tread as possible in contact with the road. Underinflation causes the tread to concave in the center, while overinflation causes it to convex. In neither case is frictional wear evenly distributed over the entire surface of the tread. And it is evenly distributed tread wear and air supported sidewalls—so tire experts tell us—that are chiefly responsible for long tire life.

Here at the plant, the checking of tire pressures is done by our service personnel. At our branches it is the branch manager's responsibility. In

(TURN TO PAGE 98, PLEASE)

THIS WAS A FAMOUS FIRE..



Free copy of this Currier & Ives print, suitable for framing, on request. Limited supply. See coupon below.

The Great Fire at Chicago commenced on Sunday evening, October 8, 1871, and swept unchecked for two days. It consumed over 5 sq. miles of the business portion of the city and destroyed public buildings, hotels, newspaper offices, railroad depots and tenement districts. Five hundred lives were lost and damage was estimated at \$200,000,000! . . . Watch future issues of this magazine for old prints of other famous fires.

..AND HERE'S A FAMOUS FIRE FIGHTER



4 lb.
and
15 lb.
sizes

CD-709 is sudden death to fire. One quick application seals out air, snuffs flame. It's swift, safe, sure.

CD-709 promptly extinguishes oil, gasoline, electrical and chemical fires—operates with full effectiveness in hot or sub-zero weather. It's harmless and odorless.

CD-709 belongs to a famous family of fire fighters, among them Fire Guard, Alaskan, Floafome. It is quality mass produced for prompt delivery to essential users.

If it's **GENERAL DETROIT** it's Better

THE GENERAL DETROIT CORP.

Former name the General Fire Truck Corp.

NEW YORK DETROIT CHICAGO

Distributors in all principal cities

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Seattle, Los Angeles, San Francisco.

HANG
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YOUR WALL

THE GENERAL DETROIT CORP.
2200 East Jefferson Ave., Detroit 7, Michigan

Please rush my free copy of "The Great Fire At Chicago."
Include details on CD-709.

Name _____

Title _____

Attach this convenient coupon to your letterhead and mail. (4031)

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 97)

no case is the gaging left to drivers.

For testing air pressures we use a special double-footed gage that we have calibrated every three months—oftener if a gage has been dropped or has undergone any other kind of rough handling. All of our branches, as well as service men here, are supplied with these gages.

As a matter of established routine, tire pressures are checked twice a week. But in actual practice, however, they are checked daily—sometimes oftener. If the tires on a loaded truck don't look right to one of our service men, he checks them, even if he tested the same tires earlier in the day.

Do we carry extra air pressures at the expense of our chassis? The answer to that question is that our chassis don't appear to suffer additional wear and tear. The fact that

all of our delivery units are rigidly governed to a maximum speed of 35 mph. no doubt helps.

We use key-type governors, the keys to which are kept in the maintenance superintendent's office. No one, not excepting branch managers, has access to these keys without a good and sufficient reason. Whenever a governor is found to have been tampered with, the driver or the branch manager—if the incident occurs at a branch—is fined the cost of having the instrument reset.

Doubtless, there are as many holes in the road paving as there ever were—probably more. But it seems reasonably safe to assume that the damage to tires and chassis hitting a rough spot at 35 mph. is considerably less than if a truck hit the same hole at 45 or 50.

The high pressure policy we employ in respect to our delivery units applies to the company's passenger cars, as well. Cars equipped with 4 ply, 6.00x16 and 6.50x16 carry 32-lb. pressure. Those having 6-ply casings carry 2 lb. less, because they have stiffer sidewalls. To compensate for the higher air pressures, we adjust shock absorbers on the passenger cars to give easier riding qualities.

As an additional form of tire insurance our firm subscribes to a special tire inspection service offered by one of the major tire companies. Conducted quarterly, and covering all of our vehicles—those assigned to our branches, as well as here—this inspection is as thorough as possible. It includes the checking of air pressures, tire condition, matching, alignment, front and rear springs, U-bolts, spring shackles, etc. As a part of the service, we get a detailed report on each vehicle, together with recommendations for any needed corrections. And the latter, incidentally, we carry out to the letter.

At a specified cost per running wheel, this service costs us approximately \$800 a year. From the results obtained, we consider it a good investment.

We keep a close record of our tire stock. In order to withdraw a tire (new, used or recapped) from inventory it is necessary to make up a special tire requisition, which must be approved by the company's general manager.

(TURN TO PAGE 100, PLEASE)



* Joe is missing! Joe sits in the driver's seat, and one of these jobs won't run without a driver. He's a small cog in the vast transportation system that is so important in this fight for Freedom.

Where is Joe? Well, Joe felt kinda tough and took the day off. He's been working regularly and hard for a long time, and it's a real job to handle a big tractor and trailer with its heavy loads these days. Joe's absence dropped another eight ball in the way of getting the goods through... only he didn't think of it like that.

Well, Joe, there are lots and lots of buck privates, fighting on the Cassino front at this minute, who are tired... and hungry... and even feeling tougher than you. They are not just giving their time for V-Day... they're risking their lives. They'd like to take a day off, too...

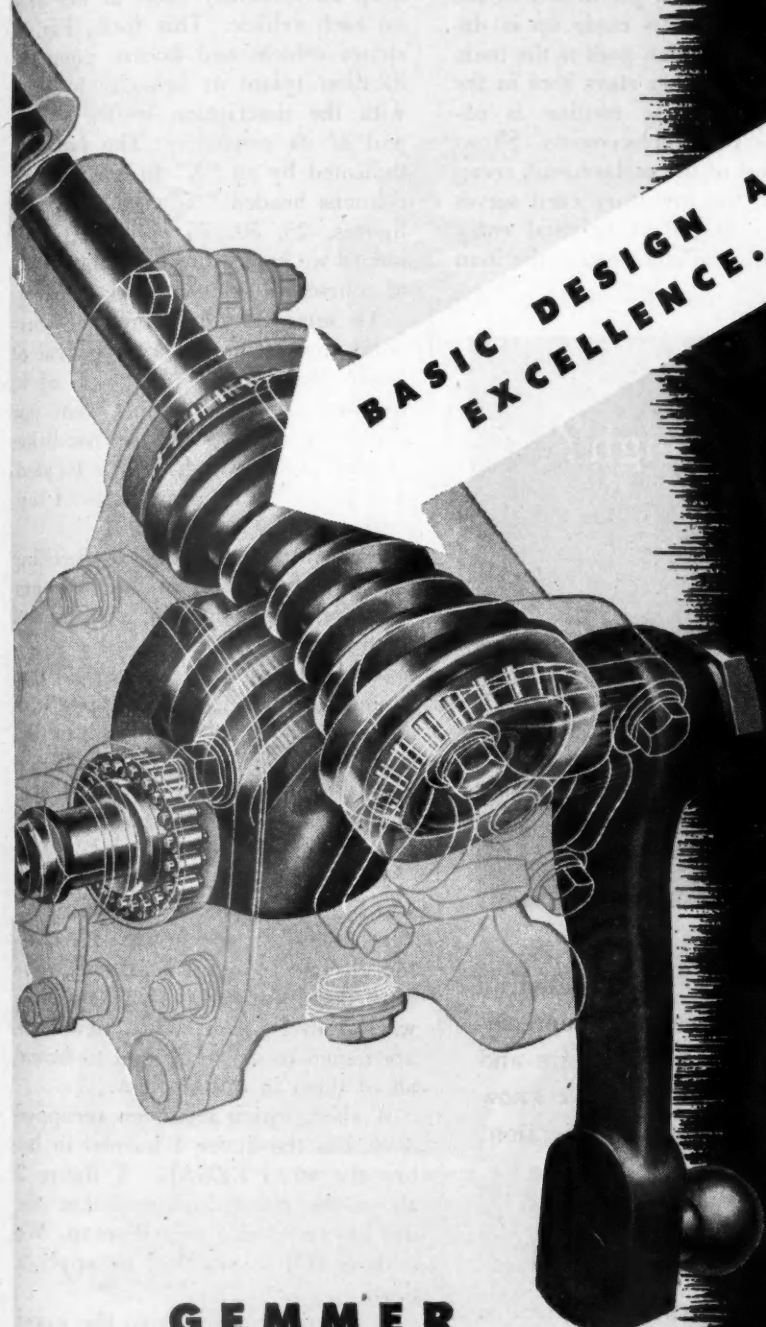
Joe... your taking time off isn't the way to win either. Let's all cooperate in this fight for Freedom, whether we are in uniform or out of it.

EDWARDS IRON WORKS, INC., SOUTH BEND, IND.

A limited number of Edwards Trailers are now available for essential civilian use under General Conservation Order M-100. Meanwhile, Edwards continues to build trailers for military use and other materiel of war.

EDWARDS





**BASIC DESIGN ASSURES STEERING
EXCELLENCE...LONG SERVICE**

GEMMER STEERING

Note the basic design of the Gemmer Steering Gear. An hourglass worm engages gear teeth that roll. Anti-friction bearings are placed at all critical points. Absence of sliding friction provides highest efficiency—easiest transfer of power—easy steering with plenty of power for parking.

Design and construction are also exceptionally sturdy and compact—providing abundant strength, long endurance—ease of installation—saving of weight without sacrifice of overall capacity or steering arm angularity. Alloy steel forgings provide ample safety factor. Internal stresses are low.

A Gemmer Steering Gear will last, and give *satisfaction* for the life of the vehicle.

Simple:—Just a few parts—nothing complex—nothing to get out of order or require frequent adjustment.

Stable:—No "lost motion"—wear reduced to least possible minimum. Steering is always firm, responsive, positive with absence of rubbery feeling and—wander.

Gemmer Steering is demonstrating its worth in every type of automotive vehicle from the lightest passenger cars to the heaviest buses and trucks—in the road-building machinery, agricultural tractor, and marine fields.

**GEMMER
MANUFACTURING COMPANY**

**6400 MT. ELLIOTT
DETROIT 11, MICH.**

GEMMER . . . Pioneer of Efficient Steering

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 98)

This form must show the number of the vehicle on which the switch is to be made and such data as date, manufacture, serial number, and whether recapped or not, on both the replacement and the removed tire. Detail on the latter includes, of course, speedometer readings, on and off, and the reason for its removal.

At the time the requisition is made up, we also fill out an inventory card, showing all the data needed for our permanent records. Printed on manila card stock, perforated in the center, this form is made up in duplicate. One section goes to the main office and the other stays here in the garage. The same routine is observed for tube replacements. Showing the cost of the replacement, recap or repair, the inventory card serves also as a source of original entry from which the office enters the item

on the cost record sheet kept for each vehicle.

In addition to a general inventory on our tire and tube stock, we also keep an inventory sheet of the tires on each vehicle. This form, Fig. 1, shows vehicle and license numbers, location (plant or branch) together with the description of the casing and of its condition. The latter is indicated by an "X" in one of four columns headed "% used," and the figures, 25, 50, 75 and 100. This record we kept up to date, including, of course, all tire changes.

To some fleet operators the foregoing may seem like a good deal of paper work but, as the result of it, we know at all times just what our tire stock consists of, the condition of each shoe and where it is located. And to us this information is of top-ranking importance.

Some little time back, in checking the tire inventory at one of our branches, we found that a spare had been switched on us.

Tracing this shoe, we learned that one of our drivers had swapped with a "country cousin" and, naturally, the company was on the small end of the deal. Because the driver had an otherwise clean record, we did not discharge him.

However, we did set up a system which tends to discourage any such "exchanges" in the future. Purchasing electric branding equipment, we burned the word REGAL on the sidewall of every tire. When new tires are issued to us, we intend to brand all of them in this manner.

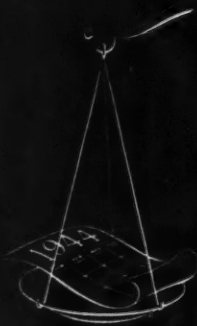
A shoe, which has been recapped once, has the figure 1 burned in below the word REGAL. A figure 2 above the name indicates that the tire has received a second recap. We seldom find it practical to apply a third.

A shoe is removed from the wheel for recap just as soon as the tread begins to disappear. We do not believe there is any economy in running a tire beyond that point before recapping. It is too vulnerable to carcass injury from any sharp object on the road.

We now are averaging 30,000 to 32,000 miles on the first recap and about 15,000 miles on the second. Add this mileage to the 35,000 to 37,000 miles the casings usually traveled before being recapped, and we

(TURN TO PAGE 102, PLEASE)

How much does a year weigh?



Another year of hard, punishing service has been loaded on your overworked rolling stock. Another year of wear and depreciation . . . of maintenance and operating headaches. In dollars and cents—in time out for repairs and parts replacements—you know what another year weighs. Lighten the load with better lubrication!

*Fight
Friction
with*

AMALIE

Pennsylvania
MOTOR OIL

GREATER OILINESS* • HIGHER SLUDGE RESISTANCE • MORE GAS MILEAGE
FEWER OVERHAUL JOBS • GREATER STAYING POWER

Standardize on AMALIE LUBRICANTS, Too!

The AMALIE line gives you correct coverage of every vital lubrication point. For details see your AMALIE distributor or write us.

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*Now More Than Ever—
It's AMALIE First...
Because AMALIE Lasts*

*Get all the facts about this superior motor oil! Write Dept. C1 for your copy of "Greater Oiliness".

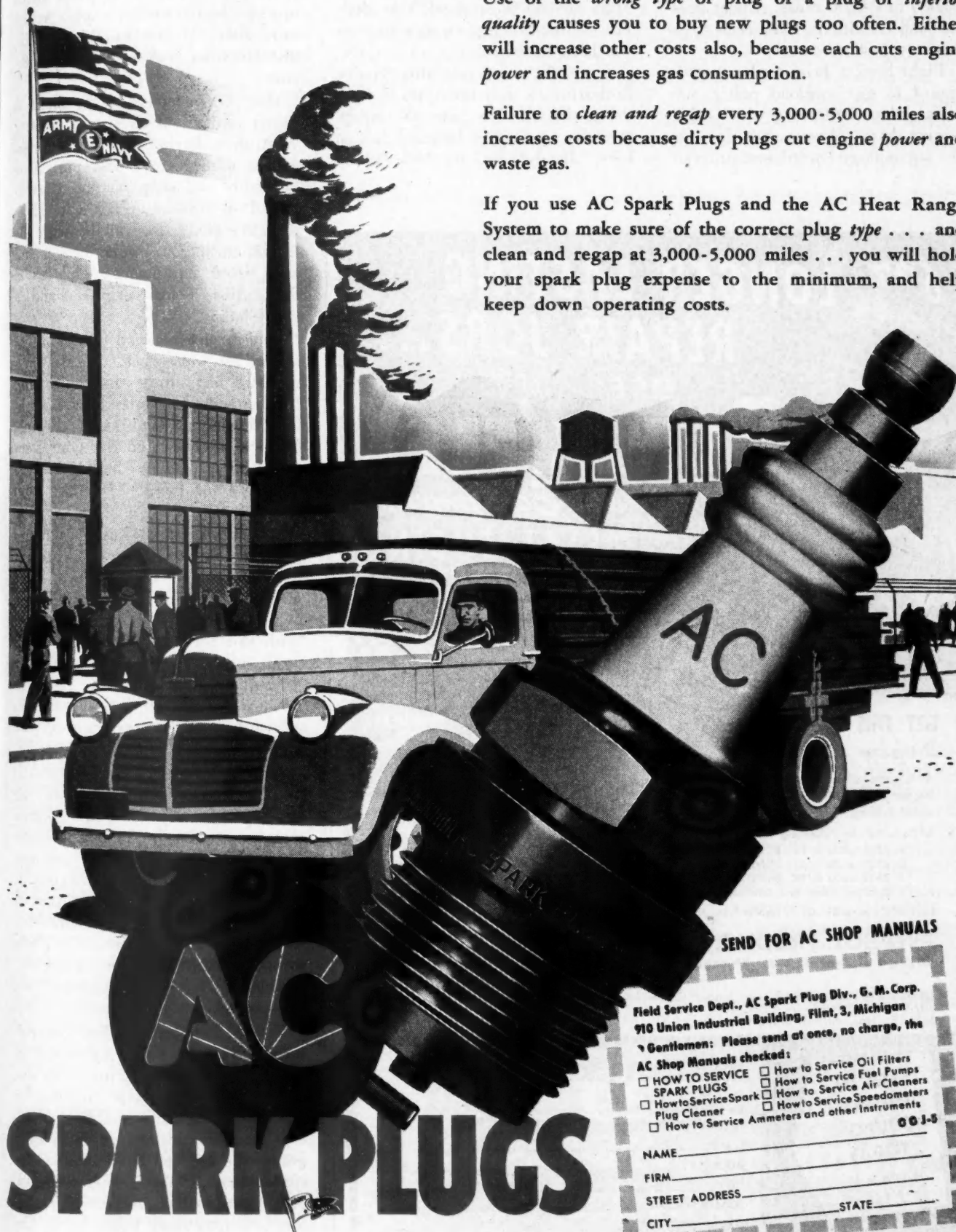
HOW TO CONTROL YOUR SPARK PLUG COSTS

Abnormal expenditures for spark plugs always result from one or more of these things:

Use of the *wrong type* of plug or a plug of *inferior quality* causes you to buy new plugs too often. Either will increase other costs also, because each cuts engine *power* and increases gas consumption.

Failure to *clean and regap* every 3,000-5,000 miles also increases costs because dirty plugs cut engine *power* and waste gas.

If you use AC Spark Plugs and the AC Heat Range System to make sure of the correct plug *type* . . . and clean and regap at 3,000-5,000 miles . . . you will hold your spark plug expense to the minimum, and help keep down operating costs.



AC SPARK PLUGS

BUY WAR BONDS — BRING VICTORY QUICKER

SEND FOR AC SHOP MANUALS

Field Service Dept., AC Spark Plug Div., G. M. Corp.
910 Union Industrial Building, Flint, 3, Michigan

Gentlemen: Please send at once, no charge, the

AC Shop Manuals checked:

- | | |
|------------------------------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> HOW TO SERVICE SPARK PLUGS | <input type="checkbox"/> How to Service Oil Filters |
| <input type="checkbox"/> How to Service Spark Plug Cleaner | <input type="checkbox"/> How to Service Fuel Pumps |
| <input type="checkbox"/> How to Service Ammeters and other Instruments | <input type="checkbox"/> How to Service Air Cleaners |
| | <input type="checkbox"/> How to Service Speedometers |

001-5

NAME _____
FIRM _____
STREET ADDRESS _____
CITY _____ STATE _____

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 100)

show a total per tire mileage of 80,000 to 84,000 miles. Under present load conditions, that seems to be the very best we can do.

Right here, a brief explanation in regard to our overload policy may be in order. Customers, who used to receive three deliveries per day, under our mileage curtailment program

now get only one delivery. While we can't give these dealers as much beer as they used to handle, we have to provide them with enough so they can make at least a pretense of staying in business. To do that, very often we have to overload. Our method of compensating for this practice has been explained.

We make no major tire repairs, preferring to send this type of work to specialists. We have the equipment for repairing tubes, and do that here. Incidentally, we have found

that synthetic rubber tubes should not be repaired by the cold patch methods; they should be vulcanized.

We have discovered that there is a variation in the overall size of newly recapped tires, even when shoes are sent to the same recapper at the same time. Understandably enough, this situation makes matching difficult.

Our service space at the plant is rather limited. It consists of a 50 x 75 ft. shop, having a 10 x 50 ft. mezzanine used as a stockroom. One corner of the shop has been partitioned off to make an 8 x 8 ft. office. Running along the wall beneath the mezzanine is our work bench and such fixed equipment items as a drill press, bench grinders and a small lathe.

Our service personnel is about as limited as our space. Besides myself, we have three mechanics and two helpers. The latter do the washing, lubricating and assist the mechanics, all of whom are competent men. All five have been with the company for periods ranging from one to four years.

We work a six-day week—10 hours per day for four days and eight hours for the remaining two. Our men get time and a half for all time over eight hours in any one day. With this force we take care of all locally-based units; approximately three-quarters of our entire fleet. In addition, we do all major mechanical work, such as overhauls, on our branch units.

Before gas and tire rationing went into effect, we kept a man on the road continuously to handle routine maintenance on branch vehicles. Now, this work—engine tune-ups, brake adjustments, the changing of oil and of oil filters and the like—is farmed out to local service stations, where branches are located. While we would much prefer to service our vehicles ourselves, this arrangement has proved fairly satisfactory.

Our method for handling the volume of work we do with the personnel and space we have, pivots on our system of making major repairs by replacing complete assemblies, whenever possible, instead of individual parts. We keep on hand at all times spare motors, transmissions, rear-end, brake and spring assemblies, radiators and electrical units to fit the

(TURN TO PAGE 105, PLEASE)

for **LONGER LASTING REPAIR JOBS...**

USE **BUNDYFLEX**

Original Equipment

COPPER COATED METAL TUBING



BUNDYFLEX

COPPER FUSED METAL TUBING

MUCH STRONGER! - LASTS LONGER!

ORIGINAL EQUIPMENT ON AUTOMOBILES, TRUCKS, FARM MACHINERY, OIL BURNERS AND GAS APPLIANCES. WILL NOT BREAK OFF OR CRACK OFF AT THE JOINTS DUE TO YOUR GREATER RESISTANCE TO VIBRATION FATIGUE.

Can Be Easily Bent - Flared - Braided or Welded!

EVERHOT PRODUCTS CO. CHICAGO, U.S.A.

Easy TO BEND

Easy TO FLARE

Use Our FLAREMASTER Flaring Tool for a perfect double-imp flare.



ALWAYS BETTER THAN COPPER TUBING FOR AUTOMOTIVE INSTALLATIONS

DEALER PRICE \$8.95

GET THIS HANDY Dealer Display ASSORTMENT

- Attracts attention; creates sales, builds bigger profits for the dealer on replacement metal tubing.
- Contains the following fast selling sizes:
 - 2-25-ft. coils 3/16" BUNDYFLEX TUBING
 - 2-25-ft. coils 1/4" BUNDYFLEX TUBING
 - 2-25-ft. coils 5/16" BUNDYFLEX TUBING
 - 1 Colorful SIGN and DISPLAY FIXTURE

LIST PRICE each \$16.00 Dealer Price each \$8.95

EVERHOT PRODUCTS CO.
2055-59 W. Carroll Ave., Chicago 12, Ill.

IMMEDIATE DELIVERY: Your Jobber carries BUNDY-FLEX TUBING in 25-ft. coils, 1/8" to 5/8", for gas, oil and brake lines, etc.

FILL IN AND MAIL COUPON TODAY

Be sure to give Jobber's name.

EVERHOT PRODUCTS CO.
2055 W. Carroll Ave., Chicago 12, Ill. DATE _____

Deliver Dealer's Display Assortment of BUNDYFLEX Tubing to us, through jobber, at Dealer Price of \$8.95.

NAME _____

ADDRESS _____

CITY _____ STATE _____

JOBBER'S NAME _____

JOBBER'S CITY _____ STATE _____

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 102)

different types of vehicles in our fleet. In this way, we are able to put a unit back on the road with minimum delay. Then, when we are not crowded, we repair the removed assembly and return it to stock. We follow the same procedure in regard to tires and tubes.

We have no complaint to make on the availability of tools. Our equipment inventory includes apparatus for exhaust and engine analysis, generator testing, oxy-acetylene welding, brake shoe servicing, hydraulic brake system bleeding, valve grinding and battery recharging. Our battery recharger is a 6-place, 12-hour unit. We are not yet sold on the "quick charge" idea. Our brake shoe servicing apparatus provides for grinding shoes to drum measurements. The hydraulic brake bleeder is a one man device.

For chassis lubrication we have a 25 lb., air-driven gun and a 1 lb., hammer-type gun; the latter for use when trucks are parked close together. Other equipment items include a 3 ton, single post, hydraulic hoist, a portable toe-in gage and a hydraulic press.

While our lathe only has a 36-in. bed and a 10-in. swing, it is equipped with practically all needed accessory tools, including those for milling, grinding, threading and gear-cutting. With this equipment and our welding apparatus we have managed to hurdle more than one parts replacement obstacle in recent months.

We send our body work, painting and lettering, radiator repairs, cylinder reboring, brake-drum turning and all wheel and axle work, other than minor corrections.

We have a hard-and-fast rule that engines must be shut off, whenever trucks are stopped. Consequently, the batteries in trucks on many city routes take a lot of punishment. However, as we see the picture, gasoline is rationed and batteries are not. Even so, the average life of our batteries is about one year.

Our present PM system has been in effect for about five years. During that period, PM has cut our mechanical maintenance upwards of 50 per cent.

All mechanical work is assigned to the different members of our service personnel by means of numbered repair orders made in duplicate. The original, printed on white bond paper, goes to the main office, when the job is completed. The duplicate, made up on manila card stock, is the mechanic's authorization to do the work indicated, shows the time involved and, finally, goes into the garage files, as a permanent record.

As a matter of policy, we rotate PM on each unit so that a different

member of our force does the work each time. Thus, by means of a friendly rivalry, in which the men through some improper adjustment try to catch each other off base or the neglect of some item, we have managed to set up a sort of "mechanical audit."

All withdrawals of parts or other material from the stockroom are billed out on a desk-type, duplicating billing machine, on a form shown in Fig. 2, and are charged to the vehicle. (TURN TO PAGE 106, PLEASE)

Know How TO REPAIR Synthetic RUBBER TUBES

THIS INSTRUCTION MANUAL *free*



REQUEST A COPY Today!

Pictures and describes in detail the proper preparation of tube injuries for repair and safe, permanent vulcanization.



The nature of synthetic rubber makes it a vital safety necessity to properly prepare and vulcanize every tube repair. Otherwise, the injury is likely to enlarge beyond the repair when the tube is inflated. Your Dillelectric tube repair equipment and supplies will enable you to make safe, dependable repairs in either synthetic or natural rubber tubes. Complete instructions prepared by Dill engineers are available to you on request. The "know-how" in repairing synthetic rubber will save you road delays and costly war rationed tire equipment.

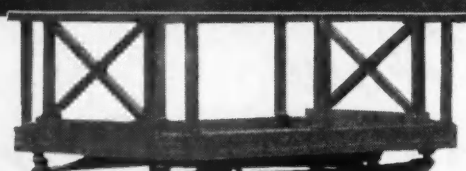
THE DILL MANUFACTURING COMPANY
700 EAST 82nd ST. • CLEVELAND 8, OHIO

DILLECTRIC
Electrically **VULCANIZED**
TUBE REPAIRS

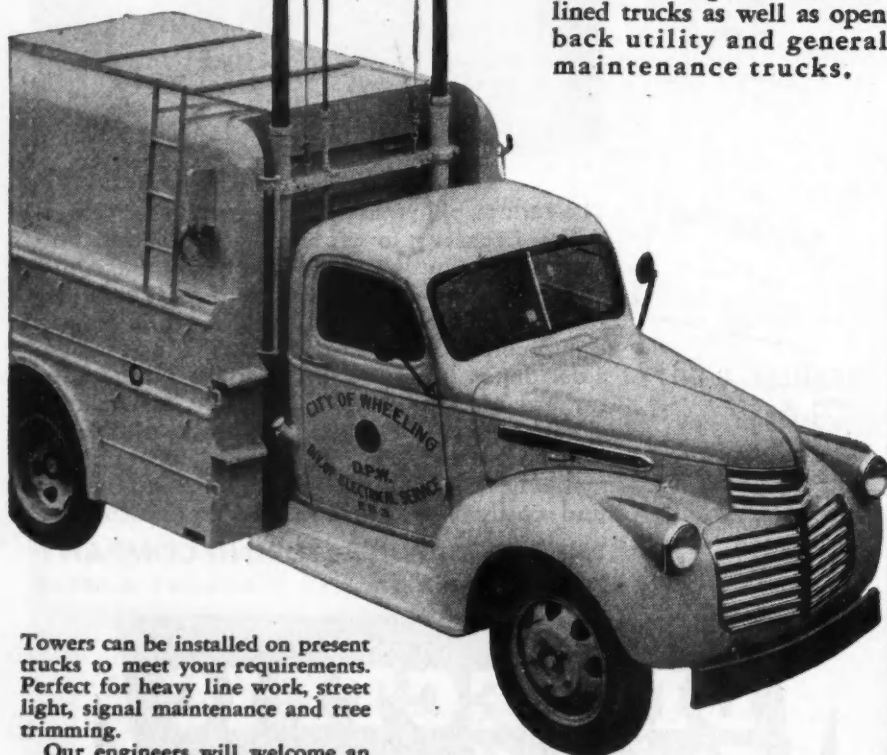
BIRD-WHITE TOWERS

OFFER

Low Initial Height with Extreme Elevations



Patented



Towers can be installed on present trucks to meet your requirements. Perfect for heavy line work, street light, signal maintenance and tree trimming.

Our engineers will welcome an opportunity of assisting you with your tower problems.

Bird-White offers you a modern, rugged, dependable tower lift without the prohibitive initial and maintenance costs. Simplicity of design and unique construction make this hydraulic tower lift the last word for all overhead work.

Can be adapted to streamlined trucks as well as open back utility and general maintenance trucks.

WRITE FOR DESCRIPTIVE FOLDER



BIRD-WHITE COMPANY

DEPT. 3, 3119 WEST LAKE STREET, CHICAGO, ILLINOIS

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 105)

cle for which they are used. In addition, these items are entered on a set of perpetual inventory cards kept here in the garage office. From these cards a stock inventory is made up monthly for the main office. Every four months we take a careful physical inventory, and verify the net totals on our cards.

We try as hard to conserve our gasoline as we do our tires. Here, at the plant, we have three gasoline tanks from which fuel is pumped to vehicles. This is done by our service personnel, not by drivers. The quantity of gas and crankcase oil put into any unit is recorded on a daily sheet on which we also keep track of our gasoline and oil inventories.

For the latter purpose, pump readings are taken at the beginning and at the end of each working day. Two of our branches have pumps. The others get their gasoline and oil outside. In any case, branch managers are required to furnish daily gas and oil record sheets.

Vehicle tanks are filled to capacity at each pumping. This enables us to figure daily per-mile consumption accurately. We believe this practice also tends to eliminate moisture condensation in vehicle tanks.

In any gasoline saving plan the operation of the vehicle itself necessarily is an important factor. While we regard our driver personnel as better than average, and find our men thoroughly cooperative, they are human beings with human failings. Therefore, when we can, we bolster our verbal conservation efforts with mechanical means. For example, our men have strict orders to shut off engines, when making delivery stops. To impress this rule on the drivers' minds, we installed a simple push button device under the driver seat. As soon as the latter was relieved of the operator's weight, the ignition current was automatically cut off.

The men soon solved the mystery of this gadget but now remember to shut off their engines when making deliveries. In this way we figure we save approximately one-quarter pint of gasoline at each stop.

Another mechanical safeguard we (TURN TO PAGE 108, PLEASE)

This is AMERICA!



That dynamic progress which says "This is America"! is nowhere so great as in the production of Raybestos friction materials for you.

★ Practically everything that is power-driven on land, sea or in the air requires brake linings and clutch facings for safe, smooth control. And the amazing advancements in the speed, power and performance of this equipment have called for like advancements in the production of friction materials. ★ Raybestos has won leadership in this basic industry. Raybestos advanced friction materials anticipate the ever-changing, ever-challenging requirements of American progress—in their design, their development and their use.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc., BRIDGEPORT, CONN.



Raybestos

AMERICA'S BIGGEST SELLING

BRAKE LINING



INVEST IN AMERICA
BUY BONDS

BRAKE LININGS, CLUTCH FACINGS, FAN BELTS, HOSE FOR CARS, TRUCKS, BUSES, TRACTORS ON THE WAR AND CIVILIAN FRONTS

BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 106)

have employed with excellent results is a gasoline mileage recorder that measures the amount of fuel actually passing through the carburetor. Easily applied, this instrument has the same moral effect on drivers that a cash register has on store clerks. While it is impossible to gage the exact amount of influence a device

of this kind exerts, the fact remains that our gas-inventory shrinkage is negligible.

To eliminate possible crankcase dilution, as well as to save fuel, we have installed heavy springs on choke controls. It now is impossible for drivers to operate with the choke partly out, while engines warm up.

To facilitate easy starting—and for other reasons—our entire fleet now is operating on premium gasoline. As early as last October we began to experience starting trouble. Batteries

were checked daily, so we knew that battery failure couldn't be a factor. Moreover, dropping gasoline mileage for the whole fleet and evidence of crankcase dilution, as indicated by lowered oil pressures, plus starting difficulty, all added up to the conclusion that the octane of the regular gasoline had been lowered.

The switch to premium fuel corrected all three troubles and, considering the lessened wear and tear on starting mechanisms and batteries, we feel that the extra two cents per gallon is a good investment.

One of the bigger problems in fleet maintenance is to find the proper technique for crankcase lubrication. After years of experience and experiment, we find that the lubricant best suited to our particular needs is a diesel type having a mineral detergent.

Whereas we used to change our crankcase oil every 3000 miles, we now are changing it at 5000. During the time we have been using this lubricant (over two years) we figure it has saved us approximately \$600 in oil changes. Moreover, since we have been using this oil we have had no bearing failures.

We believe that this lube discourages the deposit of carbon and the formation of sludge. However, we do not put the entire burden in regard to sludge formation on the lubricant. It appears to be an accepted fact that low engine temperatures tend to create sludge. Therefore, on our frequent stop delivery units, which do not generate enough engine heat to burn up the sludge-forming condensates, we artificially raise motor temperatures. For one thing, we install 180 deg. thermostats. For another, we decrease fan speed by putting in a smaller diameter pulley. A third way is to retain part of the engine heat by coating the under side of the crankcase with one-quarter inch of asphalt paint.

Incidentally, this diesel type oil becomes black in about 1000 miles of vehicle operation. Filtering does not clear up the oil's color, which, however, is no indicator as to the lubricant's continued usefulness.

We use four types of filters, varying in capacity from one quart to one gallon. The idea here is to fit filter capacity to the volume of oil it has to handle. We change filter ele-

(TURN TO PAGE 110, PLEASE)

before you buy a Directional Signal

TELEOPTIC says: Ask This Question...

**"Can it be seen from all angles
day or night at 125 feet?"**

The only answer is TELEOPTIC.

25 years of building to one specification—*protection* rather than price—has developed "the directional signal approved by all states requiring directional signal lights!"

Guaranteed against all defects if not tampered with. Bulbs and flashers guaranteed by manufacturers. Ground glass lenses. 180° visibility. Shakeproof lock washers—integral construction. Pedestal screws on—less chance of shear. Easily installed.

A limited number of sets available without priorities for trucks not previously equipped. Write for literature.

3 TYPES OF SWITCH CONTROLS



Teleoptic Finger-flip control switch on gear shift lever.



Teleoptic Instrument panel control switch with, or without, pilot light.



Teleoptic Steering column control switch.

The TELEOPTIC Company
712 Marquette St. Racine, Wisconsin



"You Bet,

Fram Saves Shop Time

—and that means a lot when mechanics are hard to get!"

Yes, the manpower shortage is bad—but here's something you can do about it! Hundreds of fleet owners have *proved*, by actual shop records, that Fram Oil & Motor Cleaners cut wear, increase motor life, reduce breakdowns and overhauls, save shop time! "200,000 miles between re-boring jobs"—this is just one of many comments received from truck, bus, and taxi fleet maintenance managers.

So take the logical step to save shop time on *your* fleet. Install big, heavy-duty Fram Oil & Motor Cleaners—without risking one penny.

HERE'S FRAM'S GUARANTEE:

Equip your fleet with Fram Oil & Motor Cleaners. Keep your own records and operate for 90 days. Then if *you* are not convinced that Fram Oil & Motor Cleaners save their small cost many times over, we'll gladly refund your money. If your fleet is already filter-equipped, step up performance with genuine Fram chemically-treated Replacement Cartridges.

FRAM CORPORATION, PROVIDENCE 16, R. I.

Canadian Distributor: J. C. Adams Co., Ltd., Toronto, Ont.

HOW'S YOUR OIL FILTER?

THE DIP-STICK TELLS THE STORY



BREWERY FLEET FINDS KEYS TO TIRE LIFE

(CONTINUED FROM PAGE 108)

ments at 10,000 miles, except on our big transport jobs. Elements on these are renewed when oil is changed.

One way in which we save a sizable amount of crankcase lubricant is to check the oil consumption rate of any given truck against its speedometer reading, when an oil change is almost due. For instance, a truck's

dip stick reads one quart short of full, but it is due for an oil change at the end of its next 200 miles. However, it will not use all of the added quart during that mileage. What, then, is the sense of putting in that quart? On a fleet of 150 units wasted quarts soon run into considerable gallonage.

Unlike our tire stock, our replacement parts inventory was in fairly good shape when shortages began to develop, and, so far, it has not been necessary to lay up a single unit. In

many instances, however, we have had to make substitutions and to salvage some part we found impossible to replace. For example, we were unable to obtain a cluster gear for a 10-year-old International, but we found that a similar gear for a Ford truck of later model was interchangeable.

END

(Please resume your reading on P. 48)

QUOTES OF THE MONTH ON TIMELY TOPICS

(CONTINUED FROM PAGE 60)

know of cases where no preventive maintenance is practiced, and where maintenance means nothing else than repair after breakdown.

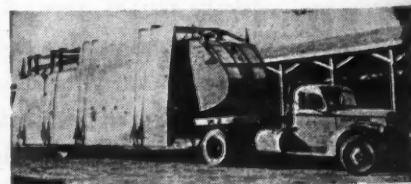
To indulge in such an expensive luxury today borders on the criminally treasonable. The sooner we look the cold facts in the face and realize that what we have is all we're going to get and that when it is gone; well—that's all there is, there isn't any more—the sooner we're going to get busy and keep what we have in the pink or as nearly in the pink as its advanced age and anemic condition will permit.

END

(Please resume your reading on P. 62)

Non-critical Degreaser

A degreasing and cleaning medium, known as Penetone, is available to fleet operators. It contains neither carbon tetrachloride nor trichlorethylene, chemicals not now available, except on WPB allotment. The manufacturer—The Penetone Co., Tenafly, N. J., says it contains nothing toxic, inflammable or injurious to the skin. It is used for degreasing metals, machinery and equipment, or as a cleaner of flooring, woodwork, etc.



This Chevrolet truck and trailer combination is believed to be the largest truck transportation unit operating in Texas. Overall length is 64 ft. and width, 13 ft. It operates under special permit, hauling Army gliders



OBJECTIVE...get there!

Even before Pearl Harbor Uncle Sam enlisted VISCO-METER* into various branches of government service. When an assignment is given to any vehicle, land or water, propelled by an internal combustion engine, it is vital to the war effort that the assignment be carried out! Uncompleted missions, because of lubricating oil failures, cannot be tolerated. So it is essential in the conduct of the war that lubricating oil troubles be guarded against before they happen.

That's VISCO-METER'S* job—on land

and sea—watchdoggin' on the gasoline and Diesel engines that power many of our fighting vehicles, and it has been doing a swell job—repeatedly assuring completed missions.

There's nothing more convincing than a service record and now is the time to talk to a VISCO-METER* engineer who will be glad to tell you of its outstanding performance and decided advantages.

Whether you design, produce or use internal combustion engines, write today.

VISCO-METER

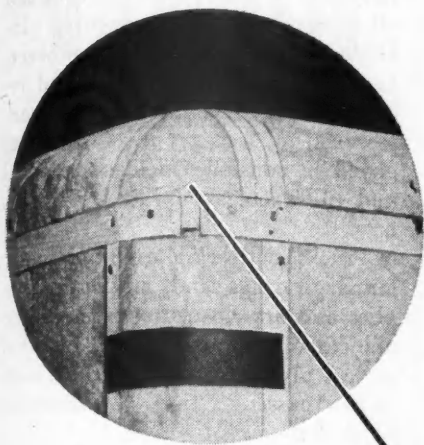
CORPORATION

GROTE ST., BUFFALO 7, N. Y.

*Fully covered by U. S. and Foreign Patents

LK CORKBOARD IS *Strong*

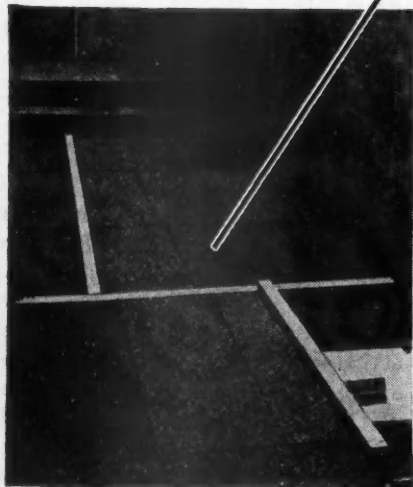
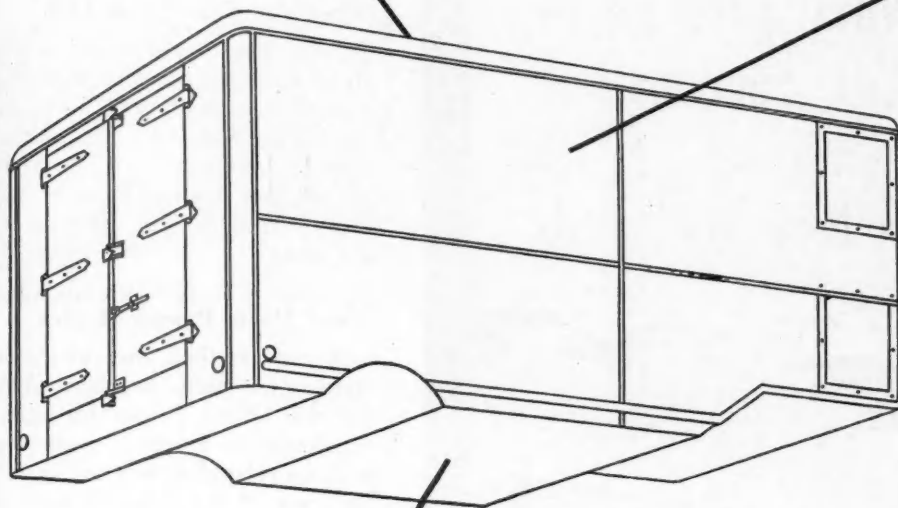
FIBERGLAS* IS *Light*



SEMI-RIGID BAT FIBERGLAS* for the top. It can be fitted easily and smoothly to conform to the rounded contours of the trailer. It is a lightweight and efficient equipment insulation.



SEMI-RIGID BAT FIBERGLAS* for side wall insulation. It is light weight and stays in place permanently. Its resilient fibres are firmly bonded to prevent settling or sagging. Can easily be cut to fit special contours—and the trimmings can be fully utilized.



LK CORKBOARD for bottom insulation. It is strong and rigid enough to support the heaviest loads. It's also light in weight and highly resistant to moisture. And LK Corkboard absorbs vibration thus helping protect the trailer's load.

ARMSTRONG offers a complete line of efficient insulations to the builder of heavy-duty trucks and trailers. When the prime considerations are the saving of weight and the holding of 0° F. temperatures, the combination of LK Corkboard and Fiberglas as shown above is ideally suited. But if your trucks are built for medium or light duty (higher temperatures), other combinations may be more suitable.

Whatever your requirements, you can be sure that Armstrong's equipment insulations will do the job. Their dependability is being

proved every day on all war fronts where thousands of Armstrong-insulated trucks and trailers are serving with the Armed Forces as food haulers, map reproduction units, portable supply vans, rolling machine shops, refueling trucks, and photographic laboratories.

Full information about Armstrong's line of equipment insulations will be furnished free upon request. Write today to Armstrong Cork Company, Building Materials Division, 3505 Concord Street, Lancaster, Pennsylvania.



* Reg. U. S. Pat. Off. O.-C. F. Corp.

ARMSTRONG'S EQUIPMENT INSULATION

LK CORKBOARD • FIBERGLAS* • TEMLOK



Copies of any order, regulation, amendment or interpretation mentioned in this department may be procured from the Office of Price Administration, Washington, D. C.



Tire Rationing Eased

Delivery trucks which heretofore have been ineligible for any tires will now be able to obtain used truck tires of sizes smaller than 7.50-20, obsolete sizes of new passenger tires and all sizes of used passenger tires. Included are trucks delivering beverages, ice cream, department and retail store general merchandise, confections, tobacco products, those engaged in consumer delivery services and other so-called "luxury" products.

Trucks delivering essential foods, laundry, drugs and medicinal supplies and dry-cleaned apparel will be able to obtain new truck tires of 8 or less ply construction and all sizes of new passenger tires. (*Amendment 73 to Ration Order 1A.*)

Synthetic Prices Cut 11%

New price ceilings set for synthetic tires and tubes average 22 per cent above maximum prices for natural rubber tires and tubes, but average 11 per cent lower than prices which have been charged for some time. (*RMPR 119, effective April 18, 1944.*)

Used Parts Priced Higher

A new method for pricing used automotive parts has been devised by the OPA. Prices for sales at wholesale or retail of parts usable without rebuilding will not exceed 75 per cent of the manufacturer's suggested retail list price for the part when new, and not exceed 30 per cent of this original list price for parts which must be rebuilt before being used. The new prices will in most cases be higher than those formerly in effect for used parts. (*Amendment 3 to MPR 453.*)

Rebuilt Parts Prices Up

Prices of rebuilt automotive parts will in most cases be higher than those formerly in effect, under a new OPA pricing method. The new method establishes rebuilders' prices at 75 per cent of the manufacturer's original suggested retail price of the part when new for sales to users, and 65 per cent of this original price for sales to wholesalers and retailers. Prices charged by wholesalers or retailers to ultimate users may not exceed 85 per cent of the original retail price. This percentage pricing method (TURN TO PAGE 116, PLEASE)

VEEDOL 90 HEAVY DUTY



jeeps under the incredibly tough conditions of actual battle

The Famous Veedol P. M. Plan is waiting for you, too!

The Veedol Preventive Maintenance Plan is doing a whale of a job for over 800 hard-working fleets. It can help yours. The plan can be tailored to fit any number

of units—and costs only 18¢ per truck. Write today for a Tide Water representative to call and go over this *proven* lifeguard for rolling equipment.

VEEDOL

OILS AND GREASES



GASOLINE POWERS THE ATTACK — DON'T WASTE A DROP! • BUY MORE WAR BONDS

OPA NEWS

(CONTINUED FROM PAGE 112)

applies only to persons who actually own the parts that are rebuilt for resale. (Amendment 4 to MPR452.)

Leasing Charges Free of Price Control for 90 Days

Charges for the leasing of trucks between over-the-road carriers in fulfillment of ODT directives have been exempted from OPA price control for a 90-day period, effective April

14 and terminating July 13, to permit study of the effect of the exemption on the transportation economy. (Amendment 46 to Revised SR 11 to General MPR.)

Owners May Sell New Trucks

Commercial motor vehicles which "have not been used except for the purpose of sale" may be resold by the original purchaser at the price paid, including increment charges paid by him, according to an OPA decision.

Owners of vehicles which were bought new, but have not been used, may now dispose of them at cost. (Amendment 115 to Revised SR 14 to General MPR.)

Seconds for "B" Books

New "factory second" passenger car tires are now available to motorists eligible for used passenger car tires, that is, "B" book holders. "Factory second" passenger car tubes may now be acquired without a ration certificate. "Factory seconds" have a price ceiling 25 per cent less than that for "perfects." (Amendment 74 to Ration Order 1A—Tires and Tubes.)

Rate Adjustment Ruling

Truckers performing pick-up and delivery services for line-haul carriers, and also tank truck motor carriers may apply for adjustment in their ceiling rates under the "hardship" provisions, as well as under the special "buyer-seller" provisions of the regulation controlling those rates, according to the OPA. (Amendment 116 to Revised SR 14 to General MPR.)

Car Tire Inspection Off

Compulsory periodic inspections of tires on passenger cars were discontinued as of April 20 by the OPA. The truck tire inspection program remains in effect.

Used Truck Form Changed

Several changes have been made by OPA in the certificate of transfer form on which sales of used commercial vehicles are reported to the purchaser's War Price and Rationing Board. (Amendment 2 to RMPR 341.)



OVERTIME

Pay it cheerfully, but—
on the basis of known facts

● These are days of frequent Overtime—and necessary, too. But—look at the Servis Recorder chart above—note those "gaps" in the travel line, marked WASTE. Each one records a period of *idle time* during the day—the truck wasn't running then. Were these delays justified, unavoidable—or were they somebody's fault (not necessarily the driver's)? In either event, they may have lengthened the needed OVERTIME (bracketed above on the chart). Better get the facts!

Well, the first thing for you to do is to find out if your truck is losing valuable time now and then on its routes during the day. (Those idle moments at odd times sure do add up!)

And the only accurate way to keep tab on all those delays (even down to 10-minute periods)—and to record Overtime, too—is to attach a little SERVIS RECORDER; then the truck is its own Time-Keeper!

Write us. The Service Recorder Company, 1375 Euclid Avenue, Cleveland 15, Ohio.



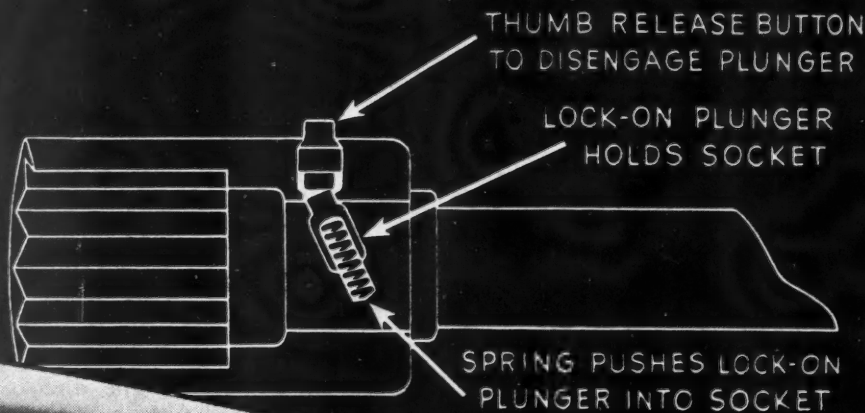
The Servis Recorder

Shows Busy and Idle Time...All Day



When New York's Engine Company No. 20 roars out of the fire house in answer to an alarm, Chief, the dalmatian mascot, rides to the blaze in this sidecar next to the driver on the big Mack Pumper

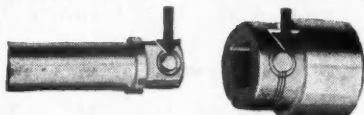
BLUEPRINT FOR YOUR WRENCH FUTURE...



BLACKHAWK'S PATENTED
THUMB RELEASE
LOCK-ON FEATURE

PATENT NO. 19,287
DES. 1927844

SAVE TIME!



Eliminate need for groping into the job for sockets and attachments that slip off the handle. "Lock-On" plunger springs into hole in socket wall — prevents slip-off!

Enjoy Socket Wrenches with Thumb-Release LOCK-ON ... at no extra cost!

Get the most for your wrench money! Blackhawk Socket Wrenches *give you the most* — and it only takes a minute to see why. There's patented "Lock-On", for example... it keeps sockets from falling off into oil pans, hot machinery and cramped quarters. Also "Gripline" handle design... wipes clean and free from dirt — no ugly, uncomfortable cross-knurls. Blackhawk gives you the steel, the clean broaching, the balance, the extra utility and the lightweight — all of which make you a better workman and "King of the Shop"!

Buy Blackhawk Wrenches from your jobber.

A Product of BLACKHAWK MFG. COMPANY, Dept. W1154, Milwaukee 1, Wis.

PLAY SAFE!

Loose sockets can cause damage! That's why aviation men recognize importance of "Lock-On". Socket cannot stick to nut when you pull away from work.

(PHOTO—COURTESY, NORTH AMERICAN AVIATION, INC.)

SAVE TEMPER!



It's great not having to cuss combinations that slip apart accidentally. But when you want 'em apart—simply press "Thumb-Release" button!



BLACKHAWK MFG. CO.

Dept. W1154, Milwaukee 1, Wisconsin

Please rush Blackhawk Wartime Wrench Booklets.

Name _____

Address _____

City _____

State _____

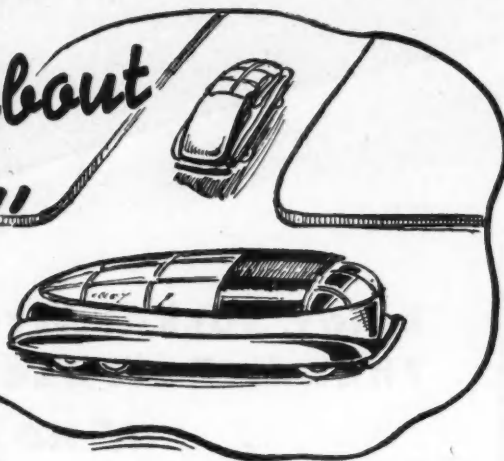
BLACKHAWK

ONLY Blackhawk Gives You "Lock-On" in 3/8" — 7/16" — 1/2" — 3/4" and 1" Square Drives



Copies of any order, amendment or interpretation mentioned in this department may be procured from the Office of Information, Office of Defense Transportation, Washington 25, D. C.

"No, Joe, it's not too soon to think about tomorrow"



RBC
ROLLER BEARINGS

Sure, we'll have to be satisfied with 1942 cars immediately after the war—but it isn't hard to conjure up a vision of what tomorrow's cars will look like. When that day does arrive, RBC BEARINGS will be in there taking care of your needs with the latest developments in roller bearing design and manufacture. In the meantime, remember that a little extra care will go a long way to add life to bearings that ordinarily would need replacement. Keep them clean and well lubricated; check them constantly for excessive play, heavy friction or fracture.

ROLLER BEARING CO. of AMERICA
TRENTON NEW JERSEY

Separate Registration Order For Household Carriers

Over-the-road household goods carriers, under the terms of General Order ODT 43, effective March 27, must register with the nearest ODT district office any truck which is not loaded 80 per cent of capacity. Upon registration, the district manager may direct the carrier to accept and transport registered shipments of household goods.

Amendment 7 to General Order ODT 3, Revised, exempts household goods carriers from all but the joint action and extension of services provisions of the order. (General Order ODT 43.)

J-A May Be Required

The director of the Division of Motor Transport may require any two or more common carriers to formulate and submit to the ODT a plan for joint action within a specified time, according to Amendment 8 to ODT General Order 3, Revised. In the event that a plan has not been submitted as directed, the carriers must explain their failure to do so.

J-A for Local Cartage

A blanket certificate authorizing the adoption, upon approval by the ODT, of joint action plans by "for-hire" motor carriers engaged in local cartage service, has been issued by the WPB. Procedure authorized by the certificate has been incorporated into General Order ODT 6A by means of Amendment 2.

Rogers Resigns from ODT; Richardson Replaces Him

John L. Rogers has resigned as assistant director of the ODT in charge of the Division of Motor Transport. He will devote the major part of his time to his duties as I.C.C. Commissioner but will be available to the ODT in an advisory capacity.

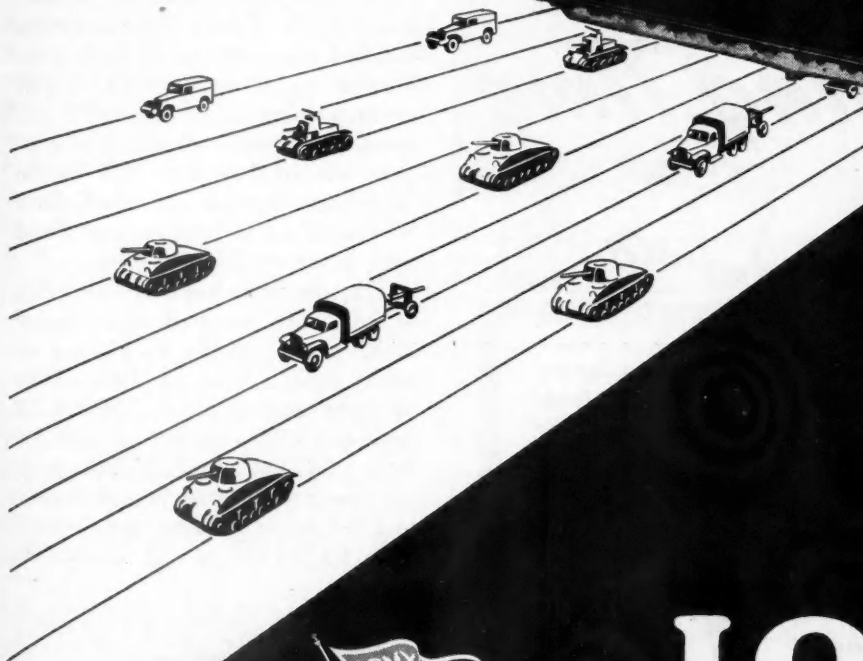
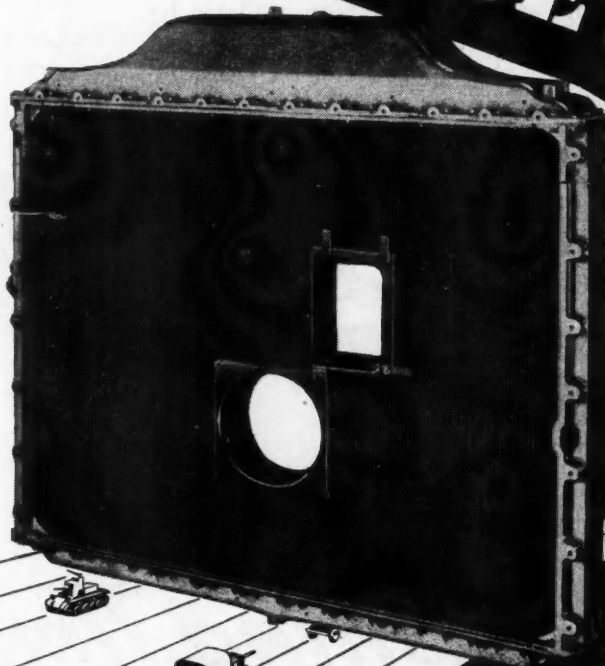
Guy A. Richardson has been appointed assistant director in charge of the Division of Motor Transport and of the Division of Local Transport of which he was formerly director. He is a former president of the American Transit Association.

Harold C. Arnot, director of the Division of Motor Transport, will continue in that capacity under Mr. Richardson.

(TURN TO PAGE 120; PLEASE)

ENDURANCE...

In war—victory ultimately depends upon endurance. That is why Long radiators are seeing action in tanks, trucks, and military equipment on all war fronts. Built to defeat the heat of battle—Long radiators will be ready to bring the same trouble-free endurance to post-war vehicles.



LONG

CLUTCHES • RADIATORS • OIL COOLERS

LONG MANUFACTURING DIVISION BORG-WARNER CORPORATION

DETROIT 12, MICHIGAN AND WINDSOR, CANADA

ODT NEWS

(CONTINUED FROM PAGE 118)

King is Executive Assistant

Homer C. King, director of the I.C.C. Bureau of Service, has been appointed executive assistant to Col. J. Monroe Johnson, director of the ODT. He is a native of Kansas and has had extensive railroad and I.C.C. experience. Mr. King, as executive assistant, and Joseph L. White, as executive officer, will both be closely as-

sociated with Director Johnson in shaping future policies.

Walter Succeeds Brady

A. Henry Walter has been made acting chief of the Private Carriers' Section of the ODT Division of Motor Transport. He succeeds Edmund M. Brady, who resigned to return to his Detroit law practice. Mr. Walter, born in Blaine, Ky., joined the ODT in May, 1942, as a transportation officer. Before that, he served in the

I.C.C. Bureau of Motor Carriers and the Bureau of Inquiry. Prior to entering government work he was engaged in private law practice, specializing in transportation.

Scott Resigns; Perrin In

Jack Garrett Scott has resigned as general counsel of the ODT to enter the private practice of law. Frank Perrin, special examiner in the I.C.C. Bureau of Service, has been appointed acting general counsel.

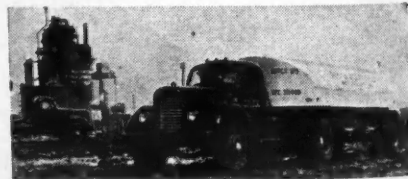
Parts Requests 2000 a Month

Nearly 2000 requests for necessary replacement parts to maintain motor trucks and buses are being received each month by the ODT. In more than 70 per cent of the cases parts are being obtained by district offices. Information on getting parts may be obtained from ODT district managers or vehicle maintenance specialists.

Bottlers Save 258 Million Miles, 31 Million Gallons

The soft drink bottling industry saved nearly 258,000,000 truck miles in 1943 compared with 1941, a reduction of about one-half, largely through compliance with ODT conservation policies, according to a report submitted to the ODT by the American Bottlers of Carbonated Beverages. The report was based upon a survey of 445 bottlers.

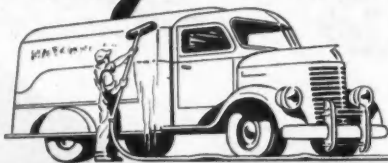
The soft drink industry, according to the survey, operated an average of 29,320 motor trucks in 1943, compared with 37,352 in 1941. Miles operated dropped from 516,294,232 to 258,315,880; number of trips fell from 11,473,008 to 7,529,520; average load per trip rose from 130 cases to 179.3, while gasoline used declined from 65,375,784 gal. to 33,786,160.



One of a fleet of 30 heavy-duty Internationals operated by Associated Refineries, Inc. near Duncan, Okla., that are hauling base stocks for high-octane gasoline from eight participating refineries on a 24-hr. schedule. They have a 149-in. wheelbase, and are equipped with two-speed rear axles, air brakes, 300 watt generators and 11.00 x 20 tires

SPEED WASH FOUNTAIN BRUSH

*Cuts Washing Time
in Half*



Washing trucks and trailers with Speed Wash gets amazing results with little effort and great speed. Clean, fresh water feeds right through the handle and tufts, so that each 12 inch stroke does a complete job of soaking, scrubbing and rinsing. There's no waste motion changing tools and back-tracking over the same surface. You can see how this easily cuts washing work and time in half, does a better job, and also saves the finish.

FULLY GUARANTEED

Put Speed Wash to work on your trucks. If it doesn't measure up to your expectations, return it for a full refund of your money. Order on this liberal basis today. Extend your priority of AA-5 or better, to insure prompt shipment. Make out your check or money order to Milwaukee Dustless Brush Co.

9⁴⁵
post paid if
check accom-
panies order.



"Dustless"—"Speed Sweep"—"Speed Wash"—brushes

**Milwaukee Dustless
BRUSH COMPANY**

526 NORTH 22nd STREET, MILWAUKEE 3, WISCONSIN

SPECIAL HOME-MADE SHOP EQUIPMENT

(CONTINUED FROM PAGE 52)

A "parts missing" list is thumb-tacked on the end of the hobby horse, so that at any moment it is possible to determine the condition of every job. A specially trained assistant inspector, a young woman, does all the parts chasing, thereby saving the more valuable time of the skilled men. A hobby horse never leaves the inspection department until all new and repaired parts are returned, and every preparatory detail completed.

When a mechanic is given an order to reassemble an engine, the hobby horse, containing all of that engine's parts, is rolled over to a clearly defined, clean and unobstructed section in the engine assembly department. One man can do this, as the hobby horse is equipped with ball-bearing casters. Thus, only one trip is necessary to move all parts, except the engine block which has its own dolly, to the mechanic's bench.

Having the hobby horse with all parts within arm's reach, the job of reassembling an engine proceeds efficiently and expeditiously. Countless steps are saved by eliminating the usual criss-crossing of the shop in the search for this or that part. The job actually assumes factory assembly line efficiency.

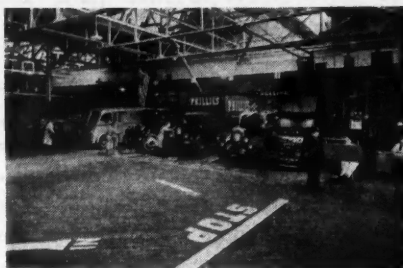
Cylinder Boring Rack

Instead of the makeshift stands, often nothing more than a wood box, a simple, inexpensive but efficient rack, Fig. 2, has been constructed on which engine blocks are placed for such operations as cylinder reboring, valve seat refacing, etc. It is 12 ft. long, made of wood and angle iron, and of convenient working height.

Blocks are rolled over the rack, where they are moved into working position. Not only is this a great time-saving convenience, but it eliminates the possibility of injury to the workers.

Engine Block Dolly

As mentioned, all parts of an engine, except the block, are carried on the hobby horse. The block has its own dolly, Fig. 3, because, in most instances, the cylinders require honing or reboring, valve seats require regrounding, etc., and the block is moved to different points in the shop.



Top, left, all vehicles coming in for service are checked in the inspection department; right, major service department. Center, left, steam cleaning department, where all major work starts; right, after cleaning all parts are inspected for condition. Bottom, unit rebuilding department, where jobs are handled on a modified factory assembly system. Entire area at left is devoted to engine rebuilding. Electrical rebuilding is handled at right, foreground to center. Axles, transmissions, etc., are rebuilt at right, center to rear.

The block dolly is made of 3/16-in. steel, all joints welded. It is 12 in. high, not counting casters, 12 1/8 in. wide at the top, with a 19-in. base.

Axle Rack

Heavy axles are moved easily, to whatever department they are scheduled to go for service, on portable racks, as shown in Fig. 4. The body and uprights are made of angle iron. It is 40 in. long, 24 3/8 in. wide and 20 1/2 in. high, not including caster height. A 3/4-in. board shelf is bolted to the base to hold parts.

As with the other racks and dollies, the principal function of the axle rack is to provide convenient mobility. One man, without assistant, is able to move any size unit with complete safety.

Rear Axle Center Stand

Differential repair and rebuilding is aided by means of a specially designed stand, called the rear axle center stand, illustrated in Fig. 5. Made entirely of metal, it stands 35 in. high, and will hold any size unit. Two 2-in. support bars, having 5/8-in. curved plates, to which the differential housing is bolted, are used to hold the housing in a convenient working position.

This stand is a great improvement over the customary manner in which this type of work is handled—usually on a work bench. Not only can the entire assembly be moved to whatever position required by the workman, but it can be firmly locked in that position until the job is finished.

(TURN TO PAGE 124, PLEASE)

HOME-MADE EQUIPMENT

(CONTINUED FROM PAGE 123)

An electric hoist over the stand further facilitates handling these units.

Axle Stand

All axle repairs are facilitated by a unique metal stand, shown in Fig. 6, that permits complete freedom of motion, and a firm support at convenient working height. In addition to its strong tubular construction, it

has three trays to hold parts and keep them from being lost or misplaced.

The axle is lifted off the portable axle rack by an electric hoist and lowered to the stand. There it is bolted in such a position that the differential housing rests on a specially constructed saddle that enables the mechanic to remove or install the differential with ease and without danger of slippage.

Jobs handled on this stand include

everything except differentials. This stand is especially convenient for repairing or rebuilding rears with a two-piece housing. Even though the axles and differential have been removed, the housing remains in position for reassembly without further handling. Not only is this a time-saver but it keeps the housing from being pushed around with the possibility of becoming damaged or getting dangerously underfoot in the working area.

Transmission Stand

Another stand that is worth its weight in gold is shown in Fig. 7. This is called the transmission stand, and designed to reduce transmission rebuilding to factory assembly simplicity. The advantages of using such a stand instead of handling this type of work on a bench will become apparent even upon casual inspection of the device. Not only does it keep the unit in a firm working position, but the tables and a tray at the bottom help to keep all parts belonging to the unit under repair in one place. The possibility of loss, damage or misplacement is reduced to the minimum.

An electric hoist overhead aids the mechanic to place the unit on the stand, where it is bolted to the heavy vertical plate, shaped to permit complete accessibility from the front and top. As is the case with the other stands, this is of sturdy metal construction and of convenient working height.

The A-Frame

The mechanics who assemble and disassemble the various units from the trucks employ what is known as the A-frame, Fig. 8, so called from the shape of the sides. While the idea for this type of frame did not originate with White, the frame employed here is of original design and construction.

Made of metal tubing, an I-beam, from which is suspended a chain hoist and four casters, this stand is a great time- and labor-saver. It is entirely possible, for example, for one man to remove or install the heaviest unit without danger of injury or back-breaking effort.

Miscellaneous Shop Aids

There are many other original shop aids to be found here. A special (TURN TO PAGE 126, PLEASE)

S.Q.*
ISN'T ALL
IN THE HEAD!

To raise your drivers' S. Q.—to help them to be safer drivers—the shop starts where teaching leaves off. The shop must supply the mechanical where-with-all that makes nearly-safe drivers safe—provides for the most effective response to head work!

That is why, your reline job calls for Grizzly full-moulded Brake Lining. Then, you get extra-efficient brake performance. Your drivers get smooth, positive response—all through an extra-long life—with astonishing freedom from adjustment... a definite contribution to higher Safety Quotient*.

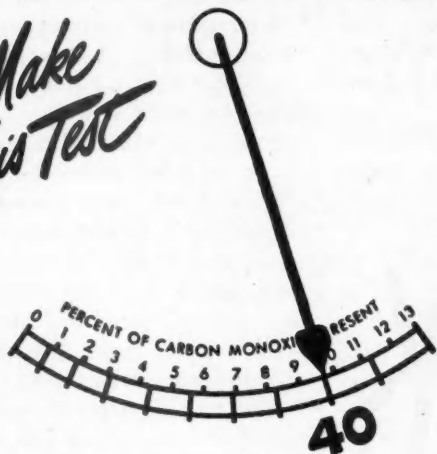
Ask your jobber or write today to
Grizzly Manufacturing Company, Paulding, Ohio
Plants at Paulding and Los Angeles

Always... Bear in mind

GRIZZLY
REG. U. S. PAT. OFF.
BRAKE LINING

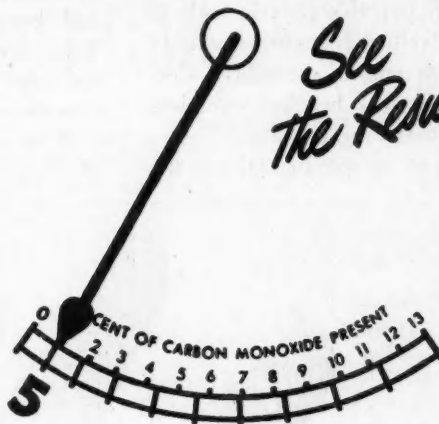
How to SAVE Gas

Make this Test



Have a Power Prover Motor Reading taken on any vehicle in your fleet. Unburned gasoline units in the exhaust gases are measured and percentage of fuel waste is instantly registered. Surveys prove this waste frequently to be as high as 40%. *

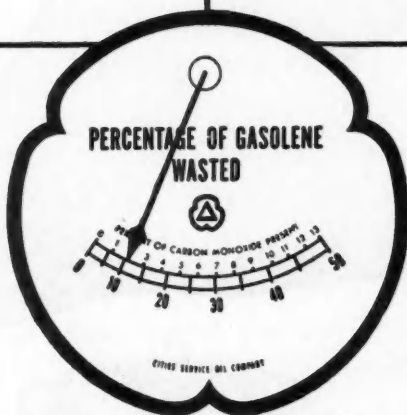
See the Results



With these facts before them, your mechanics will be better able to eliminate the causes of waste—checking their efforts with the Power Prover until the waste measurement needle is returned to almost zero.

YOU put 10 gallons of gasoline in the tank and probably get back only 8 gallons' worth of mileage—the other 2 smoke out of the exhaust—unused—wasted! Statistics show that's what's happening to more than half the vehicles in every fleet on the road today . . . yours may be included!

To enable you to track down and remedy the source of this trouble, the Cities Service Power Prover will measure the efficiency of your engine in one simple operation, and will register immediately and accurately on the Power Prover dial the percentage of gasoline being wasted.



* Survey of 4200 vehicles reveals more than 2000 wasting from 15% to 40% of daily fuel allotments.

175 fleets were Power-Proved in Long Island City, Newark, Hartford, Boston, Hagerstown and Pittsburgh . . . with the following results:

PERCENT OF VEHICLES CHECKED	PERCENT OF GASOLINE WASTED
65% showed waste of	15% or over
51% showed waste of	20% or over
44% showed waste of	25% or over
28% showed waste of	30% or over
17% showed waste of	35% or over
11% showed waste of	40% or over

FREE! Power Prover Motor Reading Demonstration on One of Your Own Vehicles. See for Yourself the Amazing Results.

MAIL THE COUPON NOW!

(This offer is available only in principal cities in Cities Service marketing territory East of the Rockies.)



CITIES SERVICE OIL COMPANY

ARKANSAS FUEL OIL COMPANY

CITIES SERVICE OIL COMPANY

Room 174
Sixty Wall Tower
New York 5, New York

Gentlemen: Please contact me regarding your Power Prover Motor Reading offer.

Name.....

Company.....

Address.....

City..... State.....

HOME-MADE EQUIPMENT

(CONTINUED FROM PAGE 124)

cial stand handles the heavier types of cylinder heads. A number of small carts are in use enabling the mechanics, particularly the women, to move heavy parts and the larger of the many portable electric tools in use. A swivel-head engine assembly stand speeds engine assembly. Certain types of work benches, complete with basic tools, are portable.

Also not to be overlooked are the

large tool racks, containing all the best time- and labor-saving tools, located not more than two or three steps away from the men who use them. This has been found to be more expeditious than the tool room system previously in effect. Despite the fact that they are not under lock and key, very few have been lost. Time saved by eliminating mechanics' trips to the tool room has been considerable.

Waste cans for all kinds of rubbish and scrap are located at every bench.

Salvageable metal scraps are kept separate. Good housekeeping is in evidence everywhere.

Procedure Reorganized

The time saved by the use of the various shop aids outlined naturally has been reflected in the speed with which general maintenance work is being handled in this branch. Major jobs that normally required a week or more now are being completed in at least half this time.

To take full advantage of this situation maintenance procedure in the Philadelphia branch has been reorganized. The new procedure reorganized the flow of maintenance work and added two new departments, namely, unit repair department and major repair department.

The new departments are arranged on a semi-production line set-up and employ the newest machine tools, techniques and machining equipment, in addition to the original equipment just discussed. A crankshaft grinder, a line bearing boring machine, a magnaflux, etc., are examples of some of the new equipment being used.

All Work Departmentalized

A truck entering a White service station for repairs makes its first stop at the inspection department where a specially trained man, usually the chief foreman, determines the vehicle's requirements. He specifies the work required, after the vehicle is checked by a competent inspector, and assigns it to the general repair department, if the job is only a matter of unit repair or replacement, or any work not requiring more than a day or two to complete. If the work consists of engine rebuilding, chassis rebuilding or any job requiring more than 24 hr., the vehicle goes to the major repair department.

To expedite inspections and assignments, the chief inspector does not go about his task with the customary order pad and pencil. A specially trained young woman makes note of all instructions, which are quickly typewritten on the proper work order form. This system has proved very successful because it enables the skilled man to make more inspections, and permits the inspector to devote more time to supervision and production requirements. Having less on her mind, the young woman

(TURN TO PAGE 128, PLEASE)



To ground crew men this is the signal that means—O.K.—Perfect!

If automotive servicemen were to borrow the hand signals of flying, this is the one they'd use for the sweet, smooth performance of a MARQUETTE Welder on a maintenance or repair job.

Cracked engine blocks and cylinder heads, damaged chassis and body members are made as good as new without the cost or loss of time needed for replacements.

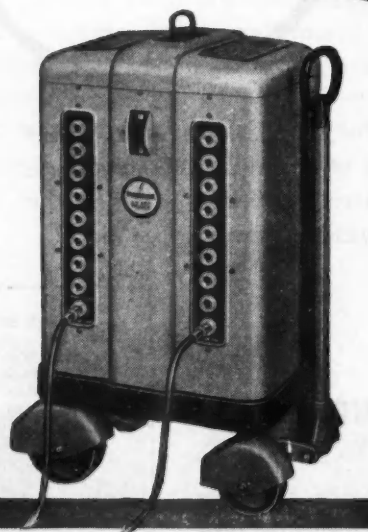
LOW INITIAL COST • NEGLIGIBLE UPKEEP
LOW OPERATING COST • FAST, FLAWLESS
WELDS

Send for free, 84 page, illustrated booklet

MARQUETTE MFG. CO., INC.
Minneapolis 14, Minn.

MARQUETTE
REGISTERED U.S. PAT. OFFICE

a.c. arc welders



TRAIN YOUR SIGHTS ON THE JOB OF KEEPING AMERICA'S WARTIME TRANSPORTATION *rolling!*

DON'T

USE A SCREW
DRIVER UNLESS
THE TIP MAKES
A GOOD FIT IN
THE SCREW SLOT

DON'T

SAVE A MINUTE
AND LOSE A WRENCH
USING IT AS A
HAMMER

DON'T

PUSH ON A
WRENCH...
WHEN THE NUT
BREAKS LOOSE
YOU MAY
BREAK YOUR
KNUCKLES

DON'T

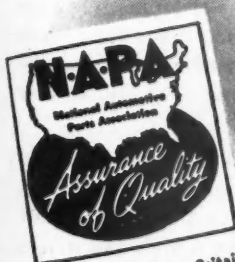
ROCK SIDE CUTTING
PLIERS WHEN
CUTTING WIRE.
IT CAN
RUIN THE
BLADES

DON'T

THROW ANY TOOL
WHEN YOU'RE THRU
WITH IT... FEW
"BOUNCE" AND
MANY BREAK

Our fighting forces have their sights trained on Victory. Here at home we have objectives to keep in our sights too... seeing that our rubber tired transportation stays on the job. It must take millions to their vital wartime tasks every day and trucks, 'busses and tractors must keep rolling.

You have done a magnificent job keeping these aging motors active. And, you have managed it despite shortages of repair parts and service Tools. Your conservation of existing Tools and their proper usage has paid big dividends. It will continue to pay off in the future as it has in the past—USE THE RIGHT TOOL... USE IT RIGHT... PUT IT BACK. The New Britain Machine Co., New Britain, Conn.



The complete New Britain Line for Automotive, Air-Plane, General Maintenance, Craft, & Production Needs is sold by leading Jobbers.

New Britain



The Army-Navy "E" Pennant, with star, flies over New Britain's plants, signifying outstanding production of machine tools, aircraft engine parts and propellers.

THE NEW BRITAIN MACHINE CO. HAND TOOLS

HOME-MADE EQUIPMENT

(CONTINUED FROM PAGE 126)

does a better clerical job. In addition, errors due to a mechanic's inability to decipher the less legible styles of handwriting are eliminated.

Little or no change has been effected by the new system in the general repair department, which has separate quarters and personnel. If a generator has been burned out, a mechanic is assigned to replace it, requisitioning the part in the usual

manner from the parts department. If it is a body or fender job, front end alignment or similar specific general maintenance or repair jobs, the proper specialists are assigned to do the work in the usual manner.

Major Jobs Go On The Line

Assuming that the job is a complete rebuild, bumper to bumper, it is assigned to a stall over which hangs an identifying number to facilitate identification and insure return of parts to the proper vehicle.

The vehicle is dismantled in the usual way, unit by unit. The A-frame, shown in Fig. 8, is used to facilitate and expedite removal of the heavy units, such as the engine, transmission and rear. After removal, all units move to the steam cleaning department, which is the first step of the production line.

There are two separate operations in the steam-cleaning department. The first consists of an external cleaning by means of a high-pressure hose. This removes all encrusted dirt and grease from the various unit housings. Then the entire engine is dipped in a tank of boiling detergent solution to make sure that it is entirely clean. This gives the job a good start, particularly facilitating the handling and dismantling of the unit.

Next, the units are disassembled on a large wood bench. All small parts are placed into wire baskets. Then, the parts and their housings are lifted by an electric hoist and immersed into a boiling detergent solution in what is called the dip tank, shown in Fig. 9. The empty block then goes back for an internal cleaning.

After pressure cleaning, the parts and their housings are placed on the hobby horse and rolled over to the parts inspection department. Here the inspector carefully examines every part for wear and general condition, as shown in Fig. 10. Parts normally under stress in service, such as the crankshaft, camshaft, connecting rods, wrist pins, etc., are given a magnaflux inspection, even though they appear perfect to the eye. This eliminates many serious road failures.

After the inspector has completed his check-up, he and a competent parts man go over the parts repair requirements. The parts man makes out a requisition for all new parts needed. An assistant, a specially trained young woman, handles all new parts replacements. A work order for parts that require any machining, grinding, etc., is made out and turned over to the foreman in charge of machine work. All machine work is handled in the unit repair department.

The hobby horse, portable racks and dollies—on which other parts, such as the rear axle, are moved (TURN TO PAGE 130, PLEASE)

New SLAM-LOCKS

PLUS THE MANY



"RECESSO" ADVANTAGES




No. 5603

No. 4878

No. 4877

No. 4877—slam action—simply slams to engage door top and bottom.

No. 4878—slamtite action—engages and pulls door into tightly secured position when slammed.

No. 5603—(top of page)—a slam action lock for single point engagement. No key.



Reverse side of lock

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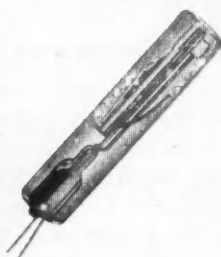
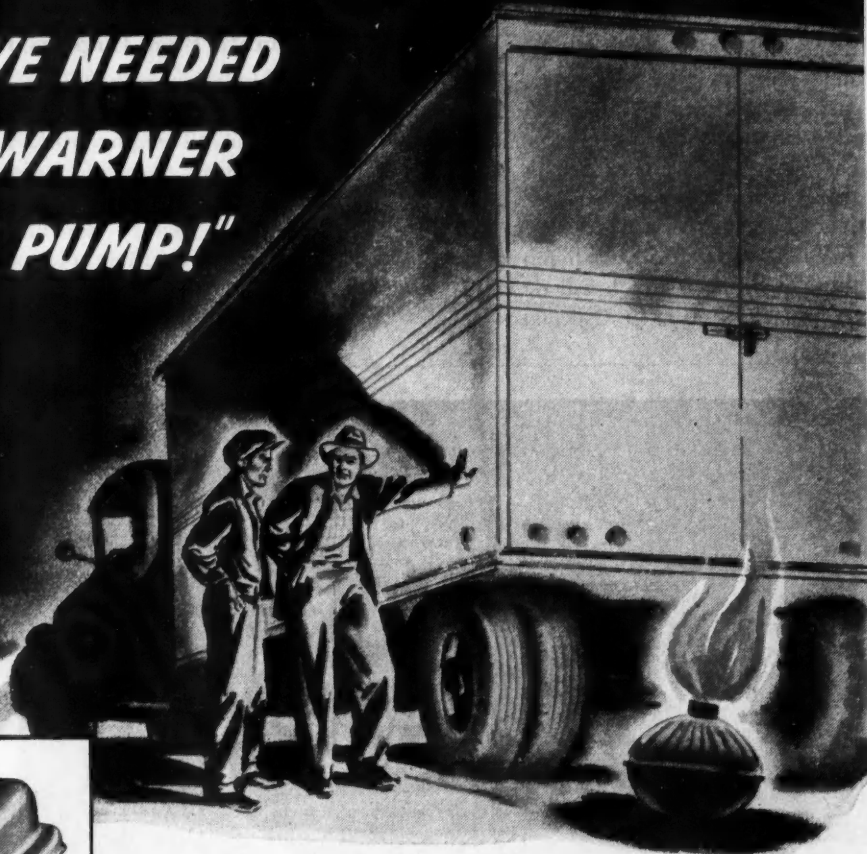
Please send literature describing your line of RECESSED LOCKS, to:

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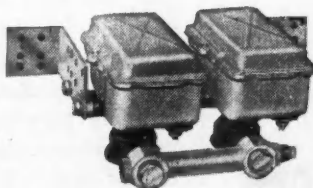
City _____

"I TOLD YOU WE NEEDED A STEWART-WARNER ELECTRIC FUEL PUMP!"



EXCLUSIVE! *Contact Points Sealed in Hydrogen-Filled Tube.* Only the Stewart-Warner Electric Fuel Pump has this safety feature that eliminates fire hazard. Sealed in a hydrogen-filled tube, the contact points won't burn, won't stick or pit. The hydrogen keeps them clean. Operated and controlled magnetically. *Approved by Underwriters' Laboratories.*

Use Stewart-Warner Dual Electric Fuel Pumps where gas consumption is high—gas mileage lower than average. Dual pumps more than double the life of each pump. Can be installed so that each pump operates independently.



Traffic-Tested. Ends Vapor-Lock and Fuel Pump Failure. DELIVERS 15 GALLONS PER HOUR . . . Available Now!

THESE are days when schedules have to be met—or else! So, you can't risk delays due to vapor-lock and fuel pump failure if you want to do your part.

The Stewart-Warner Electric Fuel Pump is easily mounted at the tank. It pushes fuel to the carburetor under pressure, eliminating air bubbles and vapor-lock. No rotating parts, no piston, no bearings to fail. Requires no attention. Lasts longer because it doesn't "beat itself to death." Delivers 15 gallons an hour on less than one ampere of current.

The special diaphragm of synthetic rubber and fabric *simply won't fail*. Tungsten contact points, sealed in a hydrogen-filled tube, can't pit, stick or burn. There's no fire hazard—the pump is approved by Underwriters' Laboratories.

Use the Stewart-Warner Electric Pump as a replacement or as an auxiliary "safety" pump for heavy-duty operation. Get the complete facts. Write today for free information. Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

STEWART-WARNER ELECTRIC FUEL PUMP

STEWART-WARNER CORPORATION

* * * * *



HOME-MADE EQUIPMENT

(CONTINUED FROM PAGE 128)

about until they reach the assembly line—remain in the inspection department until all new parts are supplied and machine work completed. They are properly tagged with work orders and other customer identification to prevent errors or confusion.

When time permits, each job waits until all its parts are finished. However, when a job is in a special rush,

completely rebuilt units can be substituted and the truck rushed to the assembly line ahead of schedule.

Unit Assembly Plan Employed

All assembly work is handled in the unit repair department, which is so arranged that all engine work is handled in one area, rears and transmissions in another, etc. In each area, a modified factory assembly line is employed to facilitate and expedite the flow of work.

When an engine is ready for as-

sembly, the hobby horse and the corresponding engine dolly standing next to it as shown in the photograph accompanying Fig. 1, are rolled over to a special space in the area. This space is designated as a section. Each section contains a work bench, engine assembly stand and a hobby horse.

The mechanic specializing in engine assembly now has all he needs to do his job properly and efficiently. It is unnecessary for him to hunt for tools or parts. Everything is close at hand, and the space in the section is large enough to permit complete freedom of motion without obstructing other workmen or being hampered by others. All related parts having been accurately prefitted and tested, he proceeds with his job under ideal conditions.

After an engine has been completely assembled, including the basic accessories, it is rolled over to the testing stand, of a type used in the factory. In addition to testing its operation, the engine also is properly run in, eliminating that step after the truck has been reassembled.

In the meantime, the rebuilding and reassembly of transmission, rear and other units has been going on in the same efficient manner. After each unit has been tested and found satisfactory, it starts back to the chassis, which has been thoroughly cleaned, checked and repaired wherever necessary.

After the truck has been completely reassembled, it is given a road test by one of the inspectors from the inspection department. Final adjustments, if required, are handled in the inspection department.

Unit Repair Department

The function of the unit repair department has been partly outlined in connection with the operation of the major repair department. However, this department is complete in itself, from the standpoint of service rendered White customers. Separate units may be brought in for complete overhaul and rebuilding, to be installed in vehicles by customers' mechanics in their own shops.

This department has its own rebuilding program, based on general requirements. It aims to keep enough rebuilt units on hand to supply current demands of the fleet shops.

END

(Please resume your reading on P. 53)



PAR MODEL 51

- A natural for the station or shop needing small amount of air.
- A horizontal—single stage—2 cylinder compressor . . . maintains tank pressure of 150 pounds and will service 2 tire lines.
- Available also in vertical model for premium space—requiring only 20" square.

- Write for illustrated brochure of details.
- BY COMPARISON—YOU'LL BUY PAR.

PAR

DIVISION

LYNCH MANUFACTURING CORPORATION
DEFIANCE, OHIO, U. S. A.

threads?

TO THE INCH? OR 19 THREADS—OR 20?

There's a reason!

● Here you see the seamless steel hydraulic power cylinder of a Walker Series 900 Jack. Those threads seal the cylinder to the base of the jack.

You'd think that a little thing like the threads on this cylinder wouldn't matter, that *any* number per inch would be good enough.

Not so, however. With painstaking attention to detail, Walker engineers experimented, found that *18 threads*

to an inch, and only 18, was right. They tried 17, and found them too coarse to effect a perfect seal. And they tried 19, and found them too fine for strength.

So, even though "just-as-good" would have gotten by, they specified 18 threads to the inch—the only right way to do the job.

Dozens of "little things" like this go into the making of every Walker 900 Series jack. This fidelity in detail, this careful selection of materials and thoroughness in design—this *Walker "Know-How"* are reasons that Walker leads in Jacks.

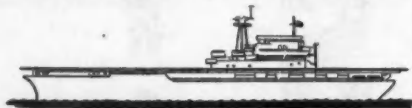
WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WISCONSIN

Also Makers of Walker Exhaust Silencers and Electric Lifts



LEADS IN JACKS

WORTHY OF AMERICA'S FIGHTING SHIPS



FIREPROOF NAUGAHYDE

In the Ready Room on an Aircraft Carrier, in most rooms on our Navy's ships where furniture is used you find fireproofed upholstery. The Navy Bureau of Ships' specification for fireproofed seat upholstery is fulfilled by the quality of our Fireproof Naugahyde.

Years before Pearl Harbor our Research and Development Departments had already evaluated the plastics and synthetic resins which could be used to improve rubber coated fabrics. Because of this preliminary work we were able to almost immediately convert from rubber to plastic Naugahyde for upholstery in tanks, trucks, buses, airplanes, ships and other mobile equipment.

Today new types of coatings developed during the war are being applied to all kinds of fabrics—cotton, rayon, nylon, fiber glass—to provide the many specialized coverings for the war in general.

These war developments and more now being perfected in our laboratory are important to you, as a user of Naugahyde. Out of war, will come a better Naugahyde, better made than ever, to serve you in meeting the needs of an America at peace.

U.S. NAUGAHYDE*

*Reg. U.S. Pat. Off. **UPHOLSTERY**



Serving Through Science

United States Rubber Company

1230 Sixth Avenue • Rockefeller Center • New York 20, N. Y.

RUST & SCALE

(CONTINUED FROM PAGE 43)

of cleaning compound in accordance with the manufacturer's directions and lengthen the engine running time as indicated by the condition of clogging. Pressure flushing is recommended in the final flushing operation to remove any loosened but undissolved rust.

Special Corrective Cleaning

1. For flushing out water jackets containing excessively heavy rust-sludge deposits, remove the core-hole plugs or cylinderhead studs, and pressure flush directly through the hole with a small flexible tube attached to the flushing gun nozzle.

2. In cases of very severe radiator clogging, the tubes may be so tightly plugged that the cleaning solution cannot reach all the clogging material. One boil-out method used with good success for clogged radiators follows: (1) Remove radiator from the car; (2) close radiator inlet and outlet; (3) fill radiator with water; (4) add can of acid cleaner; (5) with the cap off and the radiator in an upright position over a gas flame keep the cleaner solution just at the boiling point until the rust is dissolved and loosened; then (6) neutralize the radiator, and (7) pressure flush.

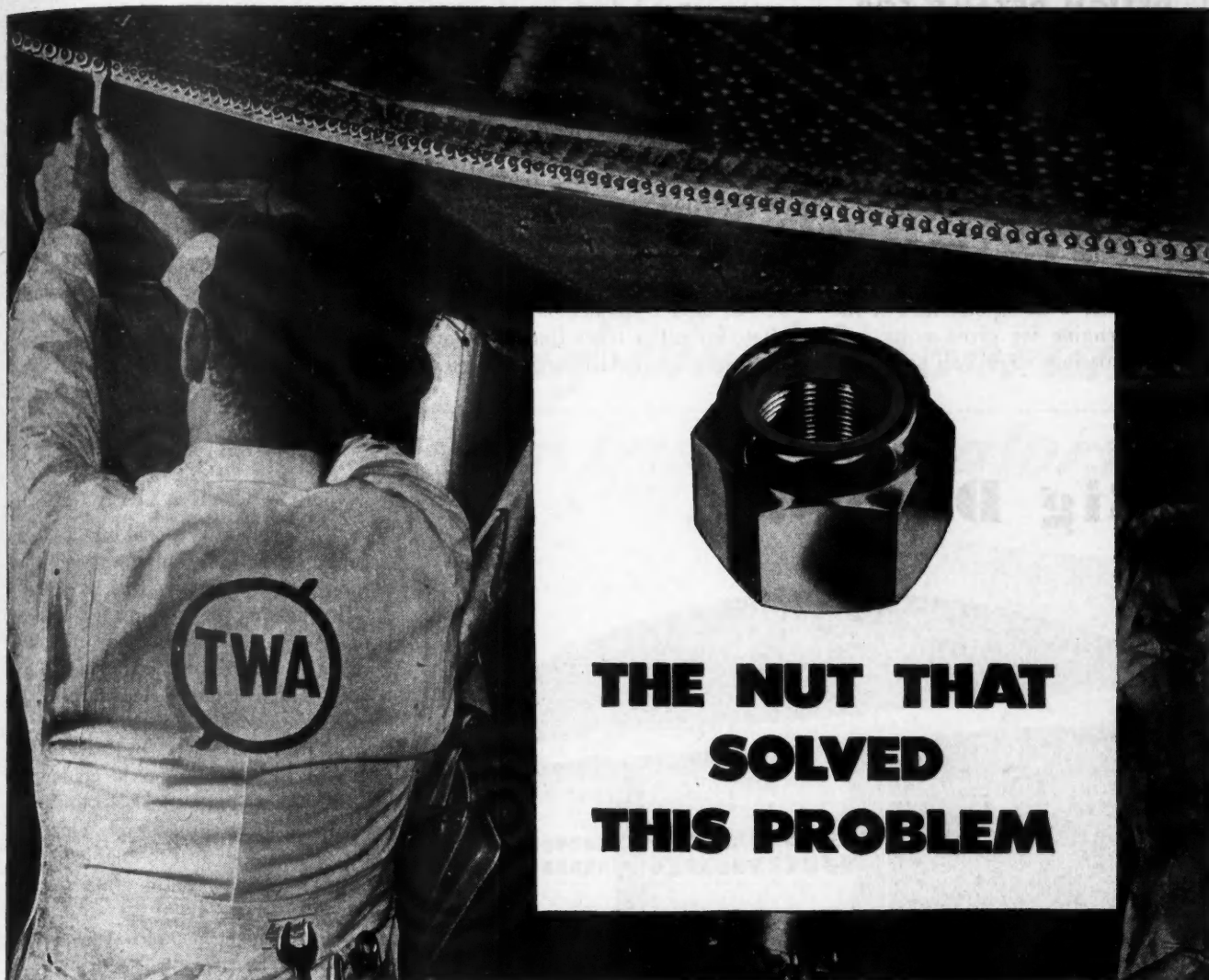
3. If boil-out methods fail, the last resort is to remove the radiator tanks and mechanically clean the water tubes, by rodding.

4. Hydrochloric (muriatic) acid solutions are sometimes used for corrective cleaning badly scaled or rusted water jackets, particularly in rebuilt engines. One fleet operator reports completely disassembling the engine and closing all except top openings of the jacket. The acid is left in the block or head from 10 to 12 hr.

After draining the acid solution, neutralizing of the water jacket is necessary. Sodium carbonate in varying concentrations is reported to be used, followed by thorough flushing with water. Machined or polished surfaces must be carefully protected. In one case a heavy grease covering is employed for this purpose. Experience and care are highly important in the use of muriatic acid for water jacket cleaning.

END

(Please resume your reading on P. 44)



THE NUT THAT SOLVED THIS PROBLEM

How to Make Each of 328 Fastenings Carry an Equal Share of the Load

Each wing of a DC-3 transport plane is fastened on with 328 nuts and bolts.

Unless the stress and strain are distributed equally, some of the bolts shear off.

The answer was found in Elastic Stop Nuts. These nuts can be given precisely the right tension—then lock fast.

This is one of the important structural fastening jobs which Elastic Stop Nuts have solved.

We've been told Elastic Stop Nuts, by solving many such structural fastening problems, have revolutionized aircraft construction.

These nuts lock fast—are safe. They stay tight and secure even in the face of unusual vibration. That's why they are approved for fastening such vital parts of an airplane's structure.

It's the elastic collar that does the trick. It molds itself to the bolt threads and grips them tight. The nut can't jiggle loose.

After the war ESNA nuts with the red collar will be ready to do the hard jobs of peacetime production.

Any fastening problem you anticipate will be welcomed by our engineers. They are ready to help you solve it and recommend the proper Elastic Stop Nut.



LOCKED ON
THE BOLT BY
THE ACTION OF
THE GRIPPING
RED COLLAR.

THE COLLAR
IS ELASTIC,
THE NUT CAN BE
USED TIME AND
TIME AGAIN.

MADE IN ALL SIZES AND TYPES—WITH
THREADS TO FIT ANY STANDARD
TYPES OF BOLTS.

ESNA
TRADE MARK OF
ELASTIC STOP NUT CORPORATION
OF AMERICA

ELASTIC STOP NUTS

Lock fast to make things last

UNION, NEW JERSEY AND
LINCOLN, NEBRASKA

DESIGN DETAILS FOR POST-WAR TRUCKS

(CONTINUED FROM PAGE 53)

(2-speed range unit) direct or overdrive 8th optional at no extra cost.

Various transmissions should be interchangeable so as to overlap into the next gross rating either upward or downward, in order by proper selection, to better "fit the truck to the job"—either with the standard or the oversize engine for given units.

Transmissions should all be perma-

nent contact helical gear type, also quiet in overdrives.

Should be plenty of reduction in all transmission first speeds.

Auxiliary Transmissions

With the foregoing engine and transmission setup, auxiliary gear boxes would be in no great demand, thus simplifying the power line. However, the Brown-Lipe 5531, 6031 and 703 or their equivalent would be adequate for entire truck line and should be readily available from the factory.

FRONT AXLES

Should of course be adequate to carry their full portion of the vehicle's GVW rating, in keeping with the load distribution of the type of vehicle under consideration and should be generously rated for capacity.

Steering knuckle wheel spindles should be of larger diameters. This especially with the lighter duty units.

The widest tread possible in keeping with good practice and physical limitations.

Live front axles and necessary transfer cases to make 4 x 4 and 6 x 6 units out of various models.

REAR AXLES

With generally speaking a wider range of ratios than has been common practice in the past.

Provision for mounting at least one oversize of tires beyond those actually required by authorized GVW with ample chain clearance. This means dual 14.00-24 on 50,000 gross units upward.

Walking beam or axle centers on all six-wheel units to be 48 to 56 in., in order to provide ample clearance for large tires; also to enable smaller units to meet certain state law requirements.

With the engine and transmission provision as previously outlined, no great demand would be evidenced for two-speed axles.

SPRINGS

A forward step would be the use of the truly progressive type springs instead of the two-stage springs as used in the past. Same progressive type springs might be used to excellent advantage under the front of certain vehicles.

Springs and axle spring pads of equal capacity ratings.

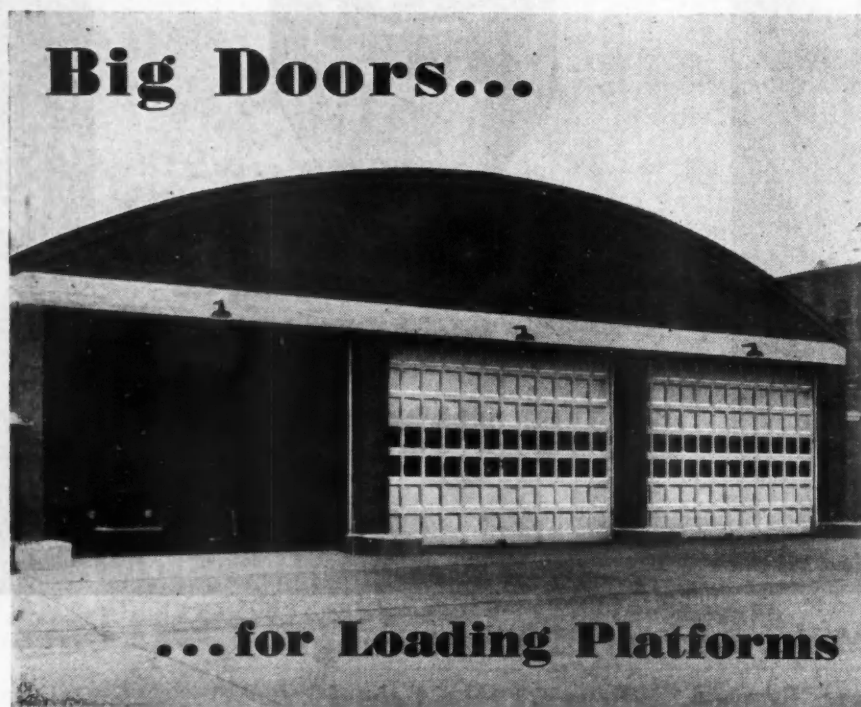
Tractor rear springs should be extremely short from center to rear end and calibrated to a total travel, no-load to full-load, of not to exceed 3 in.

STEERING GEARS

Comparatively large diameter hand wheels with powered actuation for the heavier vehicles.

BRAKES

Power-actuated on all sizes of trucks. Full air on vehicles of 20,000 lb. GVW and upward. Deceleration (TURN TO PAGE 138, PLEASE)



The Barcol OVERDOOR

*works well in big sizes
needed for "truck ports"*

THE ideal arrangement for shipping or receiving is a building to house the platform and the trucks. Problems of working in bad weather and of protecting the goods disappear entirely. Efficiency and tonnage handled is notably increased. But it takes big, easy-working, dependable doors to make this possible. The Barcol OVERDOOR is ideally suited to this difficult service, and has proved its ability in many installations. For instance, the picture above shows three 20 ft. wide by 14 ft. high doors that will admit six of the largest trailers. In addition, these doors are opened and closed by push-button control, using Barcol ELECTRIC DOOR OPERATORS. Get the data on the Barcol OVERDOOR and Electric Door Operators . . . write us, or see your Barcol representative.



FACTORY-TRAINED SALES and SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

BARBER-COLMAN COMPANY

118 MILL ST.

ROCKFORD, ILL.

How to increase your truck tire mileage

A suggestion of vital importance to all motor truck operators

THESE war days every truck is at the mercy of its tires.

That's why recapping is so important—it saves tires—and thereby saves trucks for essential wartime service.

Large fleet operators have made it a practice for years to recap their truck tires—but operators of two, three or five trucks do not always realize how much longer tires last when recapped.

Start a recapping program for your tires now, if you are not already doing so. Recap the minute the tread wears smooth. Don't presume you can get new tires. Your ration board may not be able to allot you any, because military needs have increased enormously.

No special permission is required for recapping. But the government urges timely recapping as a transportation conservation measure.

See your truck or car dealer for advice on how best to get your tire recapping done.



*Two valuable booklets
on truck and tire care*
FREE

These handy, ready reference guide-books are not advertising pieces but valuable wartime aids on the care and maintenance of all makes of trucks. For free copies, see the nearest Studebaker dealer—no obligation. Or write Studebaker, Truck Division, Dept. CC-5, South Bend 27, Indiana.

STUDEBAKER

PIONEER AND PACEMAKER IN AUTOMOTIVE PROGRESS

NOW BUILDING WRIGHT CYCLONE ENGINES FOR THE BOEING FLYING FORTRESS—MULTIPLE-DRIVE MILITARY TRUCKS—OTHER VITAL WAR MATÉRIEL

DESIGN DETAILS FOR POST-WAR TRUCKS

(CONTINUED FROM PAGE 136)

rate of 20 ft. per second per second, meaning a stopping distance of 21½ ft. from a speed of 20 m.p.h. fully loaded. Sufficient brake area and lining thickness to provide good brake life.

TIRES

A complete line of low-pressure tires, truly progressive in their ca-

pacities. S.A.E. Tire Coordinating Committee is now working on this problem and is making excellent headway.

MODEL DESIGNATIONS

For use in the model designation itself, let the letter "C" indicate conventional front end; U—engine under seat; F—cab forward front end; T—truck-tractor; D—dead third axle; L—live third axle. Assuming that a manufacturer's 1946 line of trucks will be designated the "G" se-

ries and injecting that part of the gross rating into the designation indicating hundred pound increments of gross rating, we have a comparatively simple model designation that all manufacturers could use uniformly.

Examples: 4 x 2 Grabowski (or any other make) **MODEL GC-240** means a 4-wheel, G-series or 1946 production, conventional front end 24,000 lb. gross vehicle weight rated unit, with one live axle or two driving wheels.

Six by four Grabowski (or any other) (MODEL GFT-500-L means a G series, 6-wheel, four rear wheel drive, cab forward front end, 50,000 lb. gross train weight tractor truck. In this case the letter "T" indicates a tractor and the suffix letter "L" indicates a "live" third axle. If the suffix letter were a "D" then a "dead" or trailing type third axle and a 6 x 2 vehicle would be indicated.

TRACTOR TRUCKS

A tractor truck for a given gross train weight in order to meet the same performance ability requirements as a straight truck of the same gross vehicle weight will, of course, require the same power at the road wheels. However, due to the considerably lesser net weight of the tractor alone (less the semi-trailer) than that of such a straight truck, it should not have anywhere near the same chassis weight as the straight truck. Rear springs under the tractor truck should be very short with maximum travel limited to 3 in. The tractor truck should be specially designed as such and should not be thought of simply as a short wheelbase truck.

LOAD RATINGS

Basically the full "S.A.E. Rating" method for licensing, performance prediction and other purposes. The definition of GVW originated by the S.A.E. and adopted by the Automobile Mfrs. Association and in turn by the WPB and the ODT, is as follows:

"MANUFACTURER'S AUTHORIZED MAXIMUM GROSS VEHICLE WEIGHT RATING" commonly referred to as GROSS VEHICLE WEIGHT, and abbreviated GVW, means the greatest weight of vehicle and load the manufacturer authorizes and guarantees the vehicle to accommodate with safety under normal conditions of operation. This (TURN TO PAGE 141, PLEASE)



faithfully serving at home and abroad

COOPER



NON-DIRECTIONAL
TREAD

ALL-DUTY
TREAD

SUPER-RIB
TREAD

DISTRIBUTED STRESS CONSTRUCTION

TRUCK TIRES

THE COOPER CORPORATION, FINDLAY, OHIO

DESIGN DETAILS FOR POST-WAR TRUCKS

(CONTINUED FROM PAGE 138)

rating involves the combined weights of chassis, cab, special equipment, body and of body contents commonly called payload and of the largest tires with which the manufacturer will authorize the vehicle to be equipped. No computation is required to determine this value as it is established by the manufacturer, based on his particular design and the materials used or, in other words, on the structural strength of the completely assembled vehicle with complete disregard for the carrying capacity of the tires with which the vehicle might or could be equipped. Even the entire absence of tires has no effect on the structural strength of the chassis nor, therefore, upon the GVW rating. Naturally, this rating would never exceed the combined capacity of the maximum authorized size tires with which the vehicle could be equipped.

WEIGHT DISTRIBUTION

Gross weight distribution should be as follows:

Conventional 4 x 2—30% front; 70% rear.

EUS—4 x 2—33 1/3% front; 66 2/3% rear.

CF—4 x 2—30% plus front; 70% minus rear.

All six wheelers—20% front; 40% center; 40% rear.

Tractor Truck—20% front; 40% rear, of train gross.

APPEARANCE & COMFORT

Last but not least are the matters of appearance and driver comfort. While some of the smaller vehicles used for door to door delivery and those that will be constantly in the public eye, can serve to good advantage as advertising mediums and, therefore, can stand considerable "dolling up," the general run of trucks need no particular beauty treatment. Good visibility for the driver and a comfortable driving compartment with controls conveniently located and easily operable will pay big dividends in driver's care of the equipment and loyalty to his employer.

Units in the 50,000-lb. gross and upward classifications need no fancy sheet metal. Heavy splash guard type of fenders made of boiler plate are desirable and such vehicles should also be provided with a massive

heavy-duty type of front bumpers and radiator guards as standard equipment.

END

(Please resume your reading on P. 54)

Gas Stocks Drop 7,000,000 Bbl.

Robert E. Wilson, chairman of Committee on Petroleum Economics, reported that in spite of the rationing program which has prevailed during the past year, total nationwide gasoline stocks are about 7,000,-

000 barrels lower than a year ago and stocks available for civilian use are even farther below those of a year ago.

The petroleum industry's conclusion concurs with the finding of federal government officials that regardless of local stock situations the increasing military demands and decreasing nationwide gasoline stocks will not permit an increase in current gasoline allocations for civilian automotive uses.

FOR SPEEDY SLICK CAR WASHES

Zip through those washing jobs with MOBO Auto Soap. The "old time" washer knows and prefers MOBO. Made with 100% vegetable oils it lathers instantly in hot or cold water to form swift working, quick rinsing suds that really clean. MOBO Soft Auto Soap will not streak or injure the finish even with daily washing.

MOBO AUTO SOAP



With Mobo Degreasing Fluid, grease, oil and grime dissolve instantly from motors, chassis and running gear. Mobo Degreasing Fluid is odorless and leaves no film. So for increased safety and shop efficiency, use Mobo on tools and equipment, as well as grease pits and slippery floors. When you use gasoline you ask for trouble.

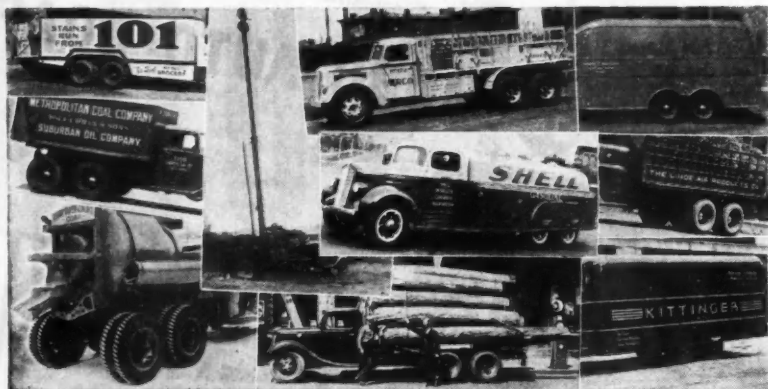
MOBO DEGREASING FLUID

JOHN T. STANLEY CO., Inc., 642 West 30th St., New York, N. Y.



Copies of any order regulation amendment and directive mentioned in this department may be procured from the Office of Information, War Production Board, Washington, D. C.

POSTWAR **ECONOMY** AVAILABLE **NOW**



TRUXMORE 3RD AXLE

Equipt trucks have **ALWAYS**
Delivered the goods at **LOWEST**
COST PER TON MILE

EQUIP YOUR PRESENT OR NEW TRUCKS
(YOU MAY QUALIFY) WITH **TRUXMORE'S**
NATIONWIDE SALES AND SERVICE
THRU TRUCKSTELL DISTRIBUTORS

Write for **BULLETIN #34**

**"A TRUCK SHOULD BE
A MONEY MAKING
MACHINE"**



5% of Parts Facilities Are Reserved for Civilian Users

The WPB has amended replacement parts Order L-158 to permit manufacturers engaged in 95 per cent of more Class A production to devote up to 5 per cent of their man-hours or machine-hours in any 30-day period for the production of needed automotive replacement parts (except parts for passenger cars) to fill Class B orders for civilian use without regard to priorities and CMP regulations. The amendment requires any parts maker to notify the WPB whenever it appears that the application of the 5 per cent reservation will interfere with military production. The WPB declared that this step will by no means provide the complete answer to the shortage of replacement parts.

Butane Equipment Now Must Get Approval

The installation of equipment to burn liquefied petroleum gas (butane, propane, etc.) in an internal combustion engine is no longer permitted by WPB, except upon specific authorization from the Petroleum Administration for War. Applications for exceptions to amended Order L-86 must be filed on Revised Form WPB-809 and are to be handled by the Washington office of PAW, except where the installation is to be made in West Coast States, in which case PAW's West Coast (District 5) office has jurisdiction.

Crude Rubber Content of Truck Tires Reduced 35%

Standard sizes of civilian highway truck tires hereafter will contain a much smaller proportion of crude rubber and a much larger amount of synthetic rubber, under provisions of a directive issued by Rubber Director Dewey to tire manufacturers. The reduction in crude content will amount to approximately 35 per cent. Two of the major types of truck tires affected are the 8.25-20, 10-ply and the 11.00-22, 12-ply. Intermediate sizes are also affected.

For example, under the terms of the directive an 8.25-20, which weighs in the neighborhood of 85 lb., may not contain more than 24 lb. of crude rubber. An 11.00-22, which weighs around 150 lb., may not contain more than 41.85 lb. of crude.

(TURN TO PAGE 144, PLEASE)

DON'T LET OLD AGE OVERTAKE TODAY'S MOTORS

EXTEND THE LIFE of YOUR VEHICLES WITH CLEAN OIL and WIX FILTEREFILS

America's rubber-tired transportation is getting "tired". As old age creeps up on the motors in your fleet, break-downs loom as the specter that keeps payloads from hitting the road.

Now, more than ever before, you need the clean oil insurance and motor protection that WIX insures. For, these new day sock type cartridges in your oil filters now will pay off in continued operation tomorrow.

The present high peak of popularity WIX enjoys in America's big time fleets is no accident . . . an army of maintenance superintendents have simply learned that in terms of maximum oil life and really clean motors, they cost less and Do More—LONGER! Ask us to show you what they can do for YOU now.



FILTEREFILS

WIX ACCESSORIES CORPORATION • GASTONIA • N.C.

WAREHOUSES: NEW YORK • CHICAGO • KANSAS CITY, MO. • MINNEAPOLIS • DALLAS • LOS ANGELES • SAN FRANCISCO
CANADIAN FACTORY: WIX ACCESSORIES CORP., LTD., 161 BAY ST., TORONTO

WPB NEWS

(CONTINUED FROM PAGE 142)

10,329 Trucks Produced

Preliminary reports show that the 1944 truck production program ended its first quarter with an actual production of 10,329 vehicles of all sizes for civilian use, of which 7128 were in the medium class and 3201 in the heavy. The goal for the quarter was 9157 vehicles. Director Middlekamp, of the WPB Automotive Divi-

sion, emphasized that while these figures indicate a satisfactory accomplishment for the first quarter, production goals for the last nine months of 1944 were substantially greater and many problems were likely to be encountered which could exert considerable influence on production schedules.

17 Million Batteries in '43

More than 17,000,000 automotive-type batteries were produced for domestic users in 1943. This is a jump

of almost 750,000 over the previous year's total. If the 1944 production program is met in full 19,300,000 units will have been produced.

Camelback Unrestricted

Grade A and C synthetic rubber camelback may be used for retreading with no restrictions, as of May 1, Rubber Director Dewey announced. Grade A uses only Buna S synthetic rubber. Grade C may have up to 25 per cent reclaimed rubber. Grade F is made of reclaimed rubber.

LOST EFFICIENCY RESTORED

HIGHLIGHTS IN THE HISTORY OF SPECTACLES

The use of lenses as an aid to eyesight started about 1260 when Roger Bacon, English scientist, discovered that a piece of curved glass produced a magnified image.

A portrait of an Italian cardinal, painted in 1352, showing two lenses crudely joined, is the first recorded picture of a pair of spectacles.

In medieval times few persons could read. With the invention of printing, a demand for spectacles was instantly created.

Astigmatism was first recognized about 1825. This marked the beginning of lenses specially ground to meet the needs of the individual.



OPTICAL science has made such amazing advances during the past few years that eyeglasses not only restore impaired sight to normal but often enable the wearer to see better than ever before.

Just as eyeglasses give back to failing vision what it has lost, so Hygrade Replacement Parts—engineered to tolerances for OLD UNITS—restore Carburetors and Fuel Pumps to their original efficiency.

Available in the famous Hygrade Contain-All Kits, for practically all Carburetors and Fuel Pumps in use today.

HYGRADE PRODUCTS CO., INC.

35-35 Thirty-fifth Street
Long Island City, N. Y.

Replacement Parts for Carburetors, Fuel Pumps, Speedometers and Shock Absorbers, Fuel Lines and Fittings.



HYGRADE

Don't BUY Labor - SELL it!



Earl S. Baldwin, president of Automotive Parts Co., Columbus, Ohio, is the new president of the National Automotive Parts Assn.



Lloyd H. Scott has been named chief engineer of the Eisemann Corporation, Brooklyn, N. Y. Previously he was chief engineer of the Airward Division, Eisemann Corporation.

Howard W. Cheney, for the past year advertising and sales promotion manager of Lockheed Aircraft, now joins Macmillan Petroleum Corp. in that capacity.



E. J. "Ned" Farrell has been appointed advertising manager for the Commercial Solvents Specialties Division with headquarters in New York City.

J. W. "Bill" Jasperson, a member of the Toledo Steel Products sales staff for several years, has been promoted to supervisor of customer relations.



Designed for efficiency



built for endurance



Shorter, more compact, better balance . . . for easier handling and greater convenience in close quarters plus matchless endurance.

A Size for Every Need . . . Heavy Duty
1", 3/4", 5/8", 1/2" (2), 3/8" (2), 5/16", 1/4".
Special 1/4" All Angle.

Ask Your Jobber's Salesman

SIoux
ELECTRIC
DRILLS

STANDARD THE

ALBERTSON & CO., INC.



WORLD OVER

SIoux CITY, IOWA, U. S. A.

New Products

(CONTINUED FROM PAGE 59)

solutions through the radiator and engine block without dismounting either. This new item is called the Tivit Radiator Flusher, and is being manufactured by Tivit Products Co. of Los Angeles.

The flusher consists of two tanks mounted on a frame equipped with casters for portability. Both tanks measure 15 x 28 in., are 15 in. deep and have a 27-gal. capacity. One tank is for the cleaning solution, the other for the descaling solution. Between the tanks is a pump operated by a 1/3-hp. motor.

To operate the flusher, the mechanic simply removes the bottom radiator hose and attaches the hose from the pump, shown in the center of the accompanying illustration, connected to the pump just below the gage. Then he removes upper hose and attaches the hose leading from the tank to the left of the pump. When started, the flusher creates a flow from the bottom upward, which will tend to remove any large particles from the radiator without forcing them through the core. Rinsing and scale removal is accomplished simply by turning the proper valves. Each solution is returned to the proper tank and may be reused.

Tivit Products also manufactures a small, bench size (20 x 20 in.) spray booth for stripping and degreasing small parts.

Another item of interest to fleet operators is the Tivit Economy Steam Cleaner designed for plants with steam lines. This is an automatic feeding injector hook-up with a solution concentrate tank and float-controlled mixing tank.

Use Free Postcard For More Details.

P211. Diesel Fuel Oil Filters

Briggs Clarifier Co., Washington, D. C., announces an improved standard line of round tank fuel oil filters for diesel engines. New models have been added to broaden the application of Briggs Fuel Oil Clarifiers so that flow capacities range up to 500 g.p.h.

Maximum working pressures and hydrostatic test pressures have been established to meet specific demands of the application.

Provision is made for registering

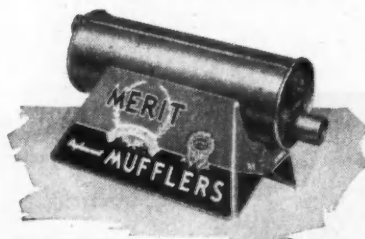
pressure differential across the refill cartridges by installing one gage in the upper compartment of the tank and another in the lower compartment. A glance tells the operator the exact pressure differential and when to change refills.

Improvements have been made in the refill holdings assembly to assure a perfect seal at both ends of the refill cartridge.

Use Free Postcard For More Details.

P212. Mufflers and Exhaust Pipes

A complete new line of "Merit" mufflers, exhaust pipes and tail pipes for automotive replacement needs has been announced by Basca Manufac-



turing Co., Inc., Indianapolis, Ind. Merit mufflers are thoroughly laboratory-tested and road-tested to meet exacting standards.

Use Free Postcard For More Details.

P213. New Fire Extinguisher

The new All-Out Fire Extinguisher manufactured by the National Powder Extinguisher Corp., New York City, has been designed especially to extinguish both flammable liquids and fires of electrical origin.



In use a stream of All-Out dry chemical is ejected which, when activated by heat, forms a dense, fire-smothering cloud over a flaming area up to 13 ft. The insulating qualities of the cloud help guard against reflash, and create a heat-deflecting screen between the operator and flame, permitting close range attack with greater safety and no heat discomfort.

The chemical, a non-conductor of electricity, is harmless to humans and delicate, mechanized parts.

Use Free Postcard For More Details.

P214. Improved Brake Lining

with wire back reinforcement for use with external (band or contracting type) brakes is announced by the Gatke Corp., Chicago.

Known as Gatke External Dura-Blok brake lining, this latest Gatke development is being used on many applications to replace woven brake lining which is critically scarce due to war production requirements.

Rolls of Gatke External Dura-Blok are furnished in a complete range of sizes up to 3/4 in. thick by 6 in. wide.

Use Free Postcard For More Details.

P215. Waterproof Horn

The Sparks-Withington Co., Jackson, Mich., has just released data on the new Sparton waterproof horn, a warning signal developed by the research division for the use of combat vehicles and heavy motor vehicles.

The powerful mechanism of this new Sparton horn produces a penetrating tone of approximately 120 decibels.

It is claimed to operate with maxi-



mum efficiency in sand, mud or slush. New type of brackets make it easy to install, and being waterproof it can be mounted on fender, running board or cab, as well as under hood.

The new horn will be available in 6-, 12- and 24-volt capacity. It measures 6 5/8 in. in height, 5 1/4 in. in width and weighs 3 3/4 lb. It is expected delivery will be made for all types of automotive vehicles under priority release.

Use Free Postcard For More Details.

(TURN TO PAGE 204, PLEASE)

Because Snow is
OUT OF SIGHT

Don't Put it
OUT OF MIND!



NOW is the time to Select Equipment for Next Winter's Snow Removal

Experienced highway maintenance men know that you can't put snow removal into a neat package in early Spring and label it "Do not open until Fall"!

They know that many phases of snow removal are best planned in the off-season, when the past winter's experience can be studied—operating techniques re-examined—equipment checked. Above all, they realize that specialized snow removal equipment—vital to winter highway maintenance—must be evaluated, ordered and produced months before the first snow falls.

It's easy (and often too late) to recognize the dangers of traffic tie-ups when snow is piled deep on your highways. But it's a lot safer to take steps NOW to insure readiness for the severest conditions next winter.

Important Advantages of WALTER 250 H. P. SNOW FIGHTER

- Clears a 28 ft. width in one run—has rugged power to smash through road-blocking drifts, plus speed to clear more miles per hour.
- Throws snow far to the side—makes widening-out easier.
- Does not waste power in slipping, stalling or wheel-spinning, because the exclusive Walter 4-Point Positive Drive delivers power to each of FOUR driving wheels according to its traction at any instant.
- By clearing main highways faster, you gain extra time for opening more miles of secondary roads.

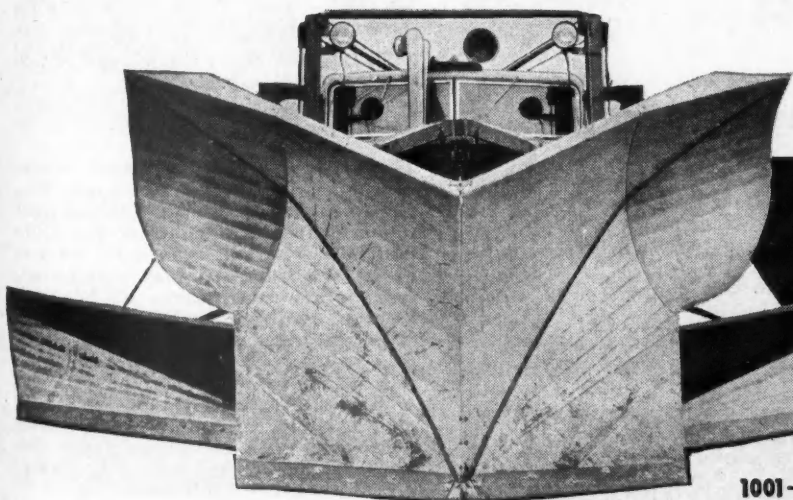
WRITE TODAY for detailed literature.

WALTER

SNOW FIGHTERS

WALTER MOTOR TRUCK CO.

1001-19 IRVING AVE., RIDGEWOOD 27, QUEENS, L. I., N. Y.





Pennsylvania has liberalized its vehicle maximum length law. The white area at the center of this Fruehauf trailer shows how it has been lengthened to carry bigger war loads. This outfit, operated by F. W. "Speed" Snell, may be seen any day on the highways in the vicinity of Erie, Pa.

PERSONNEL NOTES

Arthur G. McKeever has been chosen president, and Joseph M. Adelizzi managing director of the new Motor Carrier Association of New York, a merger of the Merchant Truckmen's Bureau and the Highway Transport Association.

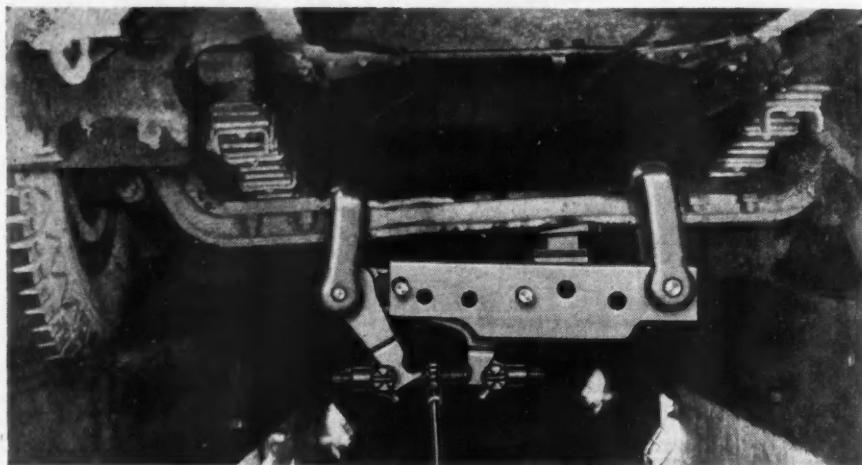
W. E. Conway, assistant director of the Studebaker National Accounts Division, has returned from Washington to his New York City Eastern Region headquarters. Special representatives assigned to him are D. V. Barker, F. C. Noble, O. W. Hinthurth and E. Y. Slaughter.

Charles Wondries, director of the Studebaker National Accounts Division, has appointed J. A. Kreager special representative in the new St. Paul office, and J. C. Sheppard in the Cleveland area.

Clifford H. Wyman has been appointed sales manager of the Dugas Engineering Corp., Marinette, Wis.

C. F. Souder, Jr., has been named assistant advertising manager of the Spicer Mfg. Co.

C. L. Dunning has been made White Motor Co. regional service manager and Clarence W. Shankleton, branch service manager at Pittsburgh, Pa.



SOLVED!

YOUR WHEEL ALIGNMENT PROBLEM YOUR TIE-UP PROBLEM

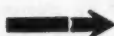
Correct and Check with

Manbee Portable Equipment

Correct with Axle Straightening Equipment

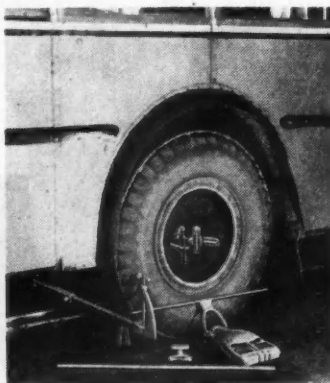
1. That straightens Any and All Bus, Truck and Trailer Axles COLD.
(The bend in axle photographed above is exaggerated for the purpose of illustrating pressure capacity.)
2. WITHOUT removing axles.
3. That exerts pressure capacities to over 200 tons.
4. That saves manpower hours when they *must* be saved.
5. That DOES the job ON the job.
6. That is backed with a Performance Warranty.

Check WITH GAUGES

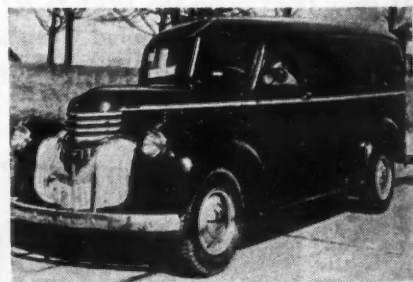


1. That are guaranteed ACCURATE.
2. That are SIMPLE to use.
3. That check ALL wheel alignment angles.
4. That are COMPLETE in every detail.
5. That are PORTABLE and can be used ANYWHERE.
6. That are backed with a Performance Warranty.

Write today for complete information
and list of satisfied users.



MANBEE EQUIPMENT COMPANY
408 South Kolmar Ave., CHICAGO 24, ILL.



The 3/4-ton Chevrolet panel truck, owned by the Monrovia Supply Co., Monrovia, Md., has been hauling mail under government contract for 130,000 miles and still is in daily service. Front tires are original equipment, rear tires were replaced at 126,000. Pistons also are originals, though rings were replaced at 70,000, at which time valves were reground, carbon removed, brakes relined and front end rebushed. It got another valve job at 98,000 miles, and at 126,000 water pump was replaced. Aside from this work, this truck had only PM service every 1500 miles.

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WORK CLOTHING



Under many circumstances Man must work in the Wet, yet guard himself from it. Whether the conditions are natural or part of an industrial process, Frog Brand Protective Work Clothing by Sawyer offers the correct solution to any such problem.



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East Cambridge, Mass.

To Help Your Trucks
SAVE GAS, OIL AND MOTOR WEAR

Install Dole Replacement
Thermostats on all your
vehicles . . .

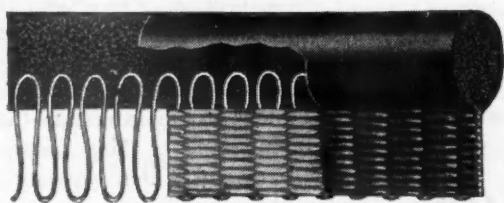


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**WATERPROOF
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TOOLS**

*They insure you
against braking
troubles*

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BE SURE TO TOP YOUR PREVIOUS RECORD IN THE 5" LOAN



How to Clean Engine Valves Before Reclaiming!

BEFORE metallizing, welding or other reconditioning procedures used in reclaiming engine valves, repair and renewal of valve faces and stems should start with **THOROUGH** cleaning. Complete removal of burned-on deposits quickly reveals defects and fatigue cracks, indicates what subsequent repairs must be made on burned, cracked and worn valves.

HELPS YOU PUT WORK ON FASTER BASIS

You can expedite this preliminary step by using electrolytic cleaning with one of the various specialized Oakite materials available. Their effective degreasing and decarbonizing action helps you put this work on a **FASTER**, more efficient basis. Complete details are yours for the asking! Write **TODAY** . . . no obligation, of course.

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MATERIALS METHODS SERVICE



CLEANING

FOR EVERY CLEANING REQUIREMENT

Johnson—ODT's New Director

Appointed on April 4 by President Roosevelt as director of the Office of Defense Transportation, succeeding the late Joseph B. Eastman, 66-year old Colonel J. Monroe Johnson has taken over his new job with the announced purpose of continuing its functions as they were administered in the past. It is his expectation that



motor trucks, railroads and waterways, even in the face of the critical manpower situation, will carry on in meeting the wartime demands as they have been doing. Assisting him is Brigadier General Charles D. Young, who remained in this position at the request of Colonel Johnson. General Young, vice-president of the Pennsylvania Railroad, was chosen acting director of ODT upon the passing of Mr. Eastman.

Colonel Johnson, since 1940 a member of the Interstate Commerce Commission, as Mr. Eastman was, will remain in that capacity and has supervision over the Bureau of Service. His earliest association with motor truck transportation was during 1911-1914 when he was chairman and chief engineer in his native state of South Carolina of the Marion County Highway Commission for the expenditure of the first road bond issue in that state, the project covering the construction of 75 miles of roads and 27 bridges.

Colonel Johnson, a civil engineer,
(TURN TO PAGE 196, PLEASE)

TOUGH BODIES



for TOUGH ASSIGNMENTS

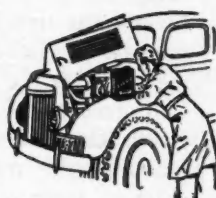
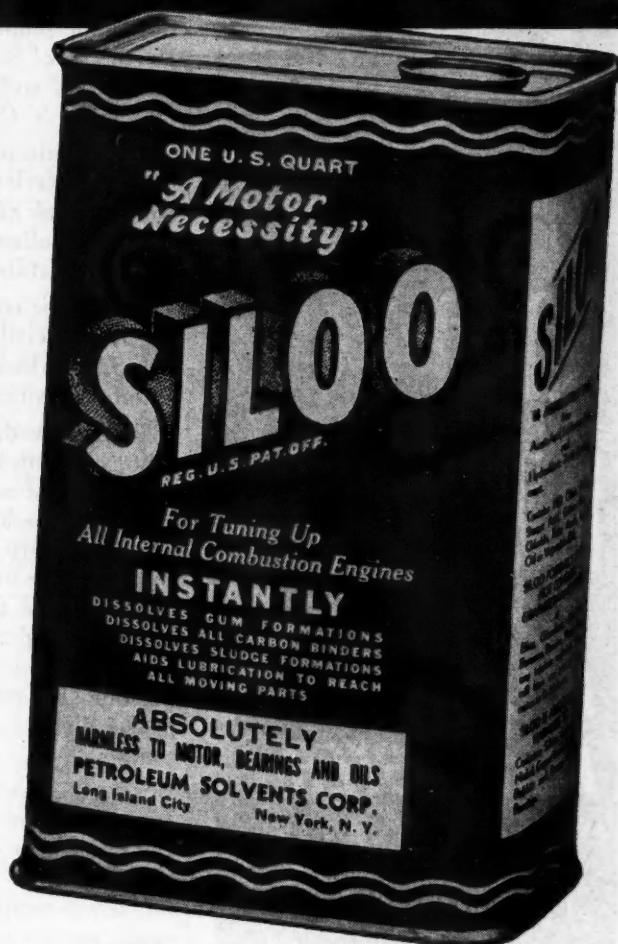
In both the capturing of important objectives and the transportation of vital supplies—on the *really tough* assignments it's the rugged, built-for-the-job men and truck bodies that "deliver the goods". Because of their well-known ability to withstand severe service most of PERFECTION'S Truck Body production has been going to the military services. However, we hope to soon be able to supply more stake, dump, and special purpose bodies for vital home front needs. Keep in touch with our distributors—write for the names of those nearest you.

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**THE PERFECTION
STEEL BODY COMPANY**
GALION, OHIO



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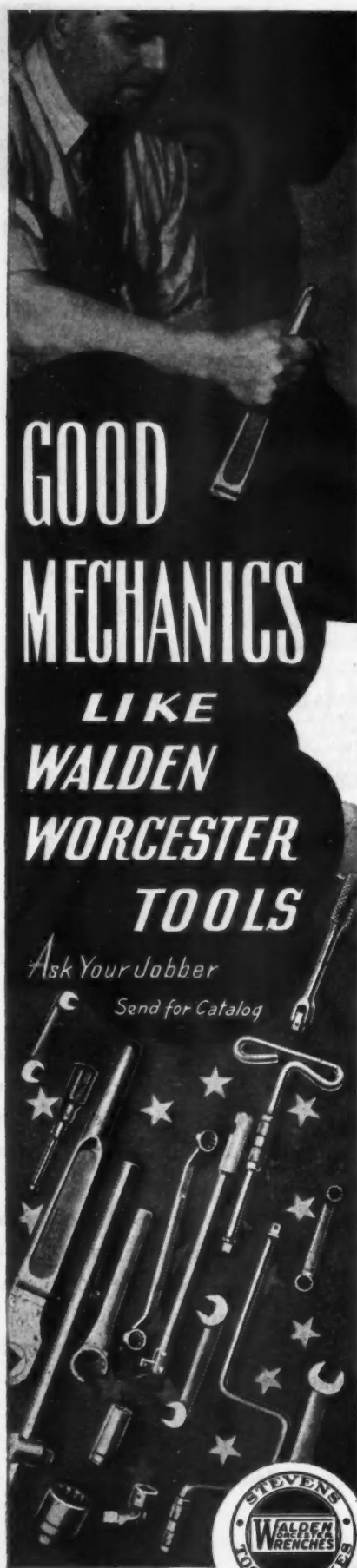


Free of gum and sludge, engines last longer and perform more smoothly and efficiently. Use Loosite to clean the engine thoroughly, and Siloo to keep it clean.

By permitting free flow of lubrication to all vital working parts, protective maintenance with these swift-working petroleum residue solvents assure long, economical operation. If you have any petroleum residue problem, write for complete data engineered to your needs.

LOOSITE: to clean the engine thoroughly
SILOO: to keep it clean





STEVENS WALDEN, INC.
468 SHREWSBURY STREET
WORCESTER, MASSACHUSETTS

JOHNSON—ODT'S NEW DIRECTOR

(CONTINUED FROM PAGE 194)

was born in Marion, S. C., May 5, 1878. He received his education in the public schools of Marion, S. C., University of South Carolina, Columbia, S. C., and Furman University, Greenville, S. C.

He volunteered for service in the Spanish-American War and served with the rank of sergeant in the First South Carolina Volunteer Battery of Heavy Artillery.

In 1898 he opened an office for the practice of civil engineering at Marion, S. C., which he has continuously maintained since.

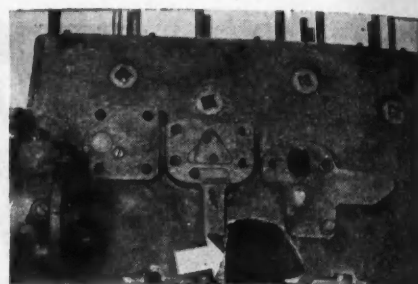
In 1916, at the request of the Governor of South Carolina, he recruited a company of military engineers that served on the Mexican Border.

Also in 1916 he was appointed by the Governor of South Carolina and served as the first chairman of the newly created South Carolina State Highway Commission, from which position he resigned to enter the World War.

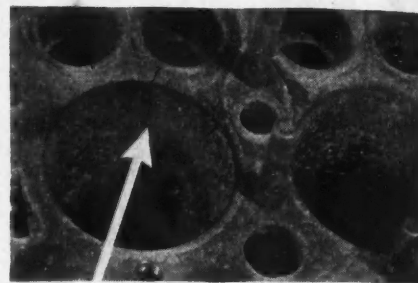
In 1917, he was commissioned by Governor Richard I. Manning to recruit a battalion of military engineers for immediate overseas service with the Rainbow Division. This battalion was recruited by him and Federally accepted within 15 days and became the first Battalion 117th Engineers, Rainbow Division, regimented with the 2nd Battalion from California and Engineer Train from North Carolina. He assumed command of the regiment and became chief engineer of the Rainbow Division, Sept. 12, 1918, during the first day of the San Mihiel offensive and received his promotion to colonel in October, during the first Argonne offensive. He was awarded a Distinguished Service Medal by the United States, the Verdun Medal and Legion of Honor by France and the Order of Leopold II by Belgium.

On his return from the war, he resumed the practice of civil engineering at Marion, S. C. During Colonel Johnson's active engineering career, his specialties were timber, drainage, roads, bridges and utilities. For many years before he came to the Administration in Washington, his profession was largely consulting engi-

(TURN TO PAGE 198, PLEASE)



Big or Little...



Tough or Easy

**K & W HAS 3
GUARANTEED ANSWERS**



Block busting rod failures, or the simplest hair line crack, K & W offers three guaranteed answers for every job.

K & W METALLIC SEAL for minor repairs—This guaranteed seal gives quick action

and lasting results. Tested and proved in thousands of gasoline and diesel engines. Does thorough job with one application through the radiator.

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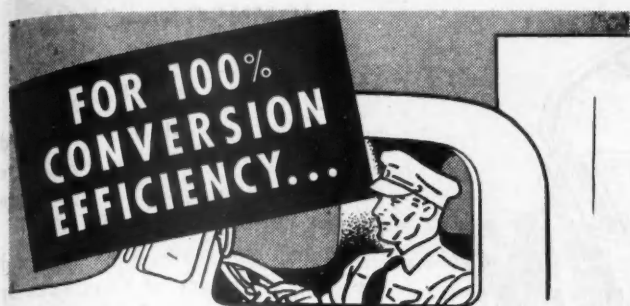
K & W FACTORY REPAIR STATIONS—Coast to coast. Each fully equipped and staffed with K & W trained mechanics, for speedy, efficient and *guaranteed* service on any job you cannot handle in your own shop.

The K & W Method is gaining enthusiastic users every day among those who operate and repair gasoline or diesel-powered equipment.

Get the facts about the K & W Method and the location of nearest Factory Repair Station from any K & W jobber—or write direct.

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The driver is the first to know if your conversion job is *right*—all the way through. He can tell by the feel . . . by the way she handles. That's why a steering correction is so important in your change-overs from light or standard chassis to heavy duty equipment.

Correctly engineered steering connections minimize steering effort, reduce tire and general wear, assure longer trouble-free performance for heavy wartime service. Superior Universal engineers, backed by 20 years' experience in serving leading truck manufacturers, will gladly analyze your next job and make proper steering connection recommendations. Write today.

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GOOD "KING" PRODUCTS SINCE 1914

Operators of Repair Shops in need of certain testing equipment may be supplied without a priority rating through our Jobbers. We can supply a limited amount of certain items and it may be possible to obtain what you need. We are permitted to make 20% of certain items and 75% of others and regret that it is impossible to supply all of your needs. Our plant is working full speed on war work. We are looking forward to the time when we can supply all the "KING" Testing Equipment you need.

RESULTS OF RESEARCH IN WAR CHEMISTRY

These Practical Products Have Been Developed Through Research in Colloidal Chemistry and May Be Found Applicable to Your Business.

Self-Emulsifying Safety Solvent dilutes with water to replace naphtha, gasoline, or benzine for grease-cleaning, hand-wiping operations in metals-processing plants. Contains no chlorinated compounds, has no flash or fire point and does not tend to defat the skin. (Data Sheet #235)

Hydro - Sealed by floating water blanket, new high-performance Carbon Gum Digestive Solvent cleans carbon and paint from aircraft engine parts without harmful effect. Used hot, water seal prevents escape of solvent vapors. (Data Sheet #236)

High-Potency Concentrate makes Self-Emulsifying Grease Solvent to remove insulating coats of grease and dirt from truck, jeep, tank, and automobile engines by emulsification and utilizing the heat of a warm engine. Cleaned engines operate more economically since original thermal efficiency is restored. (Data Sheet #237)

Unique Oil removes salt; may be applied to metal surfaces wet with sea water. Cleans, dehydrates and leaves thin film of rust-preventive compound. Suitable as a cleaner-preserved and lubricant for small-arms bore cleaning. (Data Sheet #238)

High - Boiling Dehydrating Oil absorbs residual water from parts, storage tanks or equipment. Recovery for repeated use made by simple heating above 212° F. (Data Sheet #239)

Trichlorethylene Replacement . . . non-volatile cleaning and scouring solvent for large cold immersion tank . . . rinses with hot water. Long solution life. (Data Sheet #240)

New Fuel Concentrate raises low-test gasoline to high anti-knock rating motor fuel . . . especially applicable for high-compression motorcycle engines . . . increases performance. (Data Sheet #241)

Sparkling Clear, water-in-oil cooling compound emulsion facilitates work inspections without stopping tools in metal-cutting and grinding operations. (Data Sheet #242)

Emulsifying Compound cleans oil from camouflage paints; restores dead, flat, lusterless surface. Shipped as a concentrate. (Data Sheet #243)

Instrument Shampoo emulsifying solvent cleans optical lens and delicate mechanisms without harmful effect. Results in physically clean work and complete absence of any film. (Data sheet #244)

Fluid, Pre-Paint Cleaning extracts and emulsifies all traces of wax, oil, and grease from hard surfaces. Rinses with water . . . leaves no film. (Data Sheet #245)

Carbon Tetrachloride Replacement . . . a methylated aromatic solvent available in open-top lever closures, 5-gallon kits including a steel dipping and drier basket. Designed for mobile unit shop, bench cleaning.

Gunk . . . this versatile base concentrate when diluted with appropriate solvents anticipates every automotive, military and industrial grease-cleaning problem. (Data Sheet #248)

Write for Catalogue and Engineering
Data Sheets

Confidential formula bulletins will be made available whenever the particular purpose and use that the formula is to serve is described.



FOR CARBON CLEANING—SPECIFY . . . **IMMEDIATE DELIVERY**
GUNK H-S HYDRO-SEALED CARBON DIGESTIVE SOLVENT
5 Gallons or a Tank Car
CURRAN CORPORATION
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KEY GRAPHITE SEALER



PROTECT YOUR TRUCKS WITH THIS RELIABLE SEALER

Keep your fleet in shape by coating all gaskets with Key Graphite Compound. This will prevent costly leaks in cylinder head, manifold, crankcase, transmission and differential.

You can depend upon Key Sealing Compound. It is oil and gasoline-proof; and can be removed without damaging threads or gaskets.

Try out a sample today at our expense.

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A Two-Minute Job Undersize or Odd Size Bearings

This compact unit will handle all shell bearings. Bores individual bearing shells to any predetermined size, also resizes eccentric bearings. Handles undersized and odd sized bearings. Provides a mirror finish in less than two minutes.



TOBIN-ARP Shell Bearing Boring Machine

Full details sent
upon request.

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Be
100%
With
10%
•
Buy
War
Bonds

JOHNSON—ODT'S NEW DIRECTOR*

(CONTINUED FROM PAGE 196)

neer. He designed and supervised the construction of several extensive drainage districts and several large bridges in South Carolina.

Colonel Johnson was appointed Assistant Secretary of Commerce by President Roosevelt in June, 1935, and served in that capacity until June, 1940, at which time he assumed his duties as Interstate Commerce Commissioner, having been nominated thereto by President Roosevelt on May 2, 1940, to fill the unexpired term of Commissioner Marion M. Caskie. He was renominated to succeed himself by President Roosevelt on Dec. 1, 1941, and was confirmed by the Senate Jan. 7, 1942, for a full term expiring Dec. 31, 1948.

Service Bureau Chief

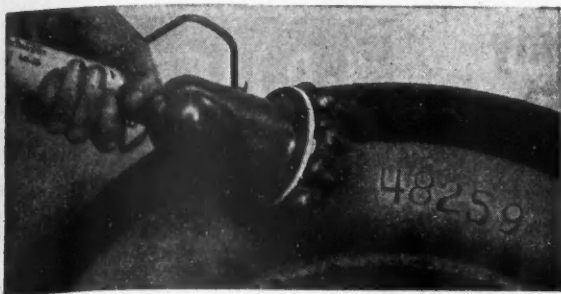
Shortly after Colonel Johnson took up his duties with the Interstate Commerce Commission he was placed in charge of the Commissions Bureau of Service, the bureau having charge of the use, control, supply, movement, distribution, exchange, interchange and return of locomotives, cars and other vehicles used in the transportation of property, including special types of equipment, and the supply of trains by any carrier by railroad, and at present is engaged in administering the emergency powers conferred on the Commission by the Transportation Act of 1920.

The colonel is an enthusiastic golfer. He is a member of the American Society of Civil Engineers, Society of American Military Engineers, Omicron Delta Kappa and Sigma Nu Fraternities. He is a charter member of the American Legion and was a member of its National Executive Committee from 1919 to 1936.

He is a member of Army and Navy, Chevy Chase, and Burning Tree Clubs of Washington, D. C. He is a Mason, a Baptist and a Democrat, as well as a descendant of the original settlers in South Carolina.

Walker Mfg. Gets "E" Award

The Walker Mfg. Co. of Wisconsin, Racine, Wis., was presented with the joint Army-Navy "E" Award for production excellence.



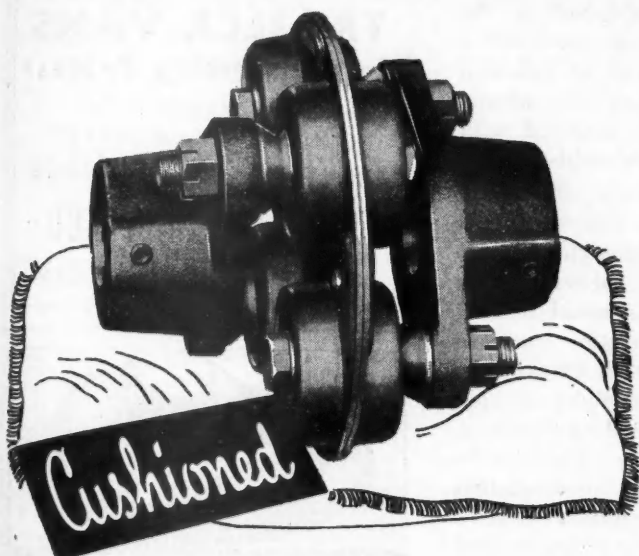
HOW LONG WILL THEY BE ROLLING?

The carcasses of those natural rubber tires on your trucks are extremely important to you. Keeping your trucks rolling and staying in business may depend on how these tires are handled. Tire conservation must be one of your first considerations today.

By the use of an Everhot Branding Iron and the Everhot Tire Record System you can know, at all times, the condition of each tire in your fleet. Lowers inspection costs, too, because your own code numbers are where they can easily be seen. Write today for descriptive literature and sample forms.

Priced at only \$35.00 F. O. B. — Maywood, Illinois

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Four resilient rubber trunnion blocks, 90° apart, are assembled under pressure in the floating center unit—a riveted, two-piece pressed steel housing to cushion shock loads. Single and double Morflex Couplings and Morflex Universal Drive Shafts are designed to meet the requirements of any installation.

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MORSE COUPLINGS and DRIVE SHAFTS

THE ALMETAL UNIVERSAL JOINT POWER TAKEOFF DRIVE



ALMETAL Joints for Industrial and Automotive applications are helping to produce essential material and move wartime loads.

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KOETHERIZING

The one best way to restore collapsed pistons to original factory fit.

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Every pulled piston should be Koetherized.

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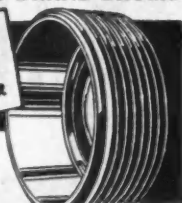
American Hammered Piston Ring Div.
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The Ideal Metal for BRAKE DRUMS

RESISTS HEAT, SCORING
GIVES SMOOTHER
BRAKING ACTION
REDUCES LINING-WEAR

Developed in cooperation
with General Foundry &
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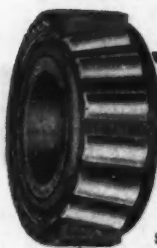
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★ BRAKE

★ ENGINE

★ CLUTCH

MAINTENANCE EQUIPMENT



The cost and time required to install a genuine Timken Bearing are exactly the same as any tapered roller bearing.

THE TIMKEN ROLLER BEARING COMPANY
CANTON, OHIO

How the Army Uses Synthetics

PRACTICALLY all new tires and tubes now being delivered for use by troops in the field are manufactured in whole or in part from synthetic rubber, and instructions for soldiers in their proper installation and maintenance are in process of publication.

A technical bulletin, initiated by the Maintenance Division, Army Service Forces, and published by the Chief of Ordnance, calls attention to different procedures to be followed in installing and caring for synthetic rubber products as compared with those made of natural rubber.

The bulletin urges special pains in maintaining correct tire pressures, noting that under-inflation is more harmful to synthetic rubber than to natural rubber. Abnormal flexing action from under-inflation creates a relatively higher temperature in the synthetic product, damaging the rubber. Properly inflated, a synthetic tire will flex normally. The bulletin also cautions against over-inflation because the excessive pressure makes a tire more susceptible to bruises and otherwise subjects it to greater wear.

Special markings make the new synthetic products easy to identify. Tire casings bear a circular red spot with the letter "S" and a number. Inner tubes have red or blue stripes around their bases. A red spot marks synthetic rubber tracks.

Although installation of synthetic tires requires somewhat different handling than for those made of natural rubber, installation of synthetic tubes demands special changes. For example, rims must be thoroughly cleaned and all grease, grit, scale and rust removed. Scale and rust seriously damage synthetic rubber tubes. The casing interior should be in-

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LIGHTING HEADQUARTERS
YOUR K-D LAMP JOBBER

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K-D LAMP CO.



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TRAILER VANS
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CAMPBELL
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GREATER MILEAGE - GREATER SAFETY
INTERNATIONAL CHAIN AND MFG. CO.
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I USE WOHLERT
PARTS, BECAUSE THEY
ARE IDENTIFIED
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SO DO I, AND
THEY'RE ENGINEERED
TO FIT TOO!

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Steel-faced Plywood Panels

- ✓ Tremendous Strength
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FOR BODY, ROOF, DOOR, PANEL AND FLOOR CONSTRUCTION
HASKELITE MANUFACTURING CORPORATION, Grand Rapids, Michigan

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Hardwood Plywood Panels

- ✓ Provide One-Piece Dust-proof Floor
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KEEP YOUR VEHICLES MOVING ECONOMICALLY

with

HALL VALVE SERVICING
EQUIPMENT

Ask Your Jobber or write

THE HALL MFG. CO.
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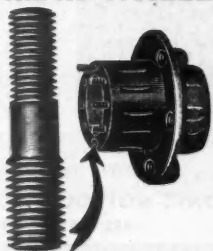


A-S-F 5th Wheel
AMERICAN STEEL FOUNDRIES
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OVERSIZE REAR WHEEL

STUDS
for all
TRUCKS

Send for
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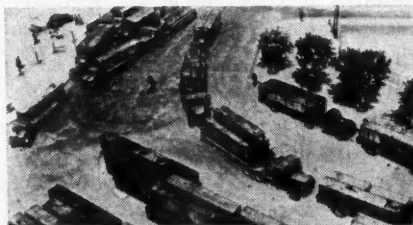
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spected for breaks and rough cuts and then cleaned thoroughly. It is imperative that a tube be completely dusted with talc or soapstone before installation since it does not slip into position as readily as a natural rubber tube. It should be placed evenly inside the casing.

Since the synthetic tube is not as elastic as one of natural rubber, it is easily weakened and before insertion in the casing it should not be inflated beyond the point where it rounds out. If flaps are used, they also must be dusted with talc or soapstone and must be installed well centered and wrinkle free.

A two-step inflation process after insertion into the casing is essential. There should be first partial inflation to pull the tube and casing into their approximate positions followed by complete deflation and then inflation to proper driving pressure.

For a tire mounted on a drop-center rim the tire beads must be out of the rim well before inflation to avoid pinching and tearing. Dual tires and all "driven" tires must be closely matched. Since synthetic rubber cuts and chafes more readily than the natural product, avoidance of quick starting and stopping, skidding, overloading and speeding becomes even more important.



A repair base of the 12th Air Force Service Command somewhere in North Africa. These big Fruehauf truck-trailers are able to move to a forward airdrome and practically rebuild a damaged plane. Every service squadron of the 12th Air Service Command has from three to six such trailers, each specially equipped for a particular type of service. They even produce their own electric power to drive the tools with which they are equipped



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Important aid to keeping motor transport functioning. Avoid costly bearing failures—and replace with free-rolling, self aligning LINK-BELT Roller Bearings.

Made by makers of famous LINK-BELT Silverstreak Silent Timing Chain.

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VITAL TO—

- Low Mileage Costs
- Easy Operation
- Maintained Schedules



SKF

BALL AND ROLLER BEARINGS

NEW PRODUCTS

(CONTINUED FROM PAGE 146)

P216. Magnaflux Solvent

The Colonial Alloys Co. of Philadelphia is marketing a solution, called Cyclodiene Hydrocarbon Solvent, for cleaning and neutralizing Magnafluxed parts.

A simple dip or spraying of Magnafluxed parts with Cyclodiene is said to remove the oil and dye, and leave clean metal surfaces.

Cyclodiene can be handled in ordinary open tanks or spray machines at room temperature. Toxicity may be said to be negligible.

Since Cyclodiene is tested neutral, and shows no signs of hydrochloric, muriatic, oxalic, nitric or sulphuric acids, or cyanides, it is safe to use with all metals including the aluminums and magnesiums.

The solvent recovery rate is very high, so the solutions may be used over and over again. This results in a low per gallon cost for cleaning.

Use Free Postcard For More Details.

P217. Aromatic-Proof Hose

Resistoflex Corp. of Belleville, N. J., has developed a special line of hose assemblies that are immune to the action of aromatics in fuels of high concentrations. The hose itself contains a core made of specially compounded compar—a rubber-like vinyl plastic developed by Resistoflex.

This core does not swell, break down or slough under the action of lubricating oils or fuels containing the highest percentage of aromatics. The combination of properties has resulted in the successful application of Resistoflex compar hose assemblies for fuel, oil, instrument and hydraulic lines in aircraft, gasoline and diesel-powered trucks, refrigeration equipment and hydraulically operated machine tools.

Use Free Postcard For More Details.

P218. Triple Socket Wrench

Having the same approximate dimensions as a single socket wrench and with very little additional weight, the new Tesco Multi-Socket Wrench automatically accommodates No. 10 standard, No. 12 standard, 1/4 in. standard and light, and 5/16 in. light

(TURN TO PAGE 205, PLEASE)

WAUKESHA Multi-Fuel ENGINES

DIESEL OIL
GASOLINE
BUTANE

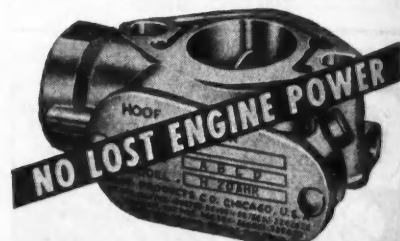
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NEW LOW COST DRILL GRINDER

Anyone can do expert drill grinding with this simple-to-use drill grinding attachment—fits on any bench grinder—saves buying new twist drills—saves time and materials that dull bits waste. Grinds bits from 3/16 to 1 1/4. Write for FREE literature.



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The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co. of La., N. J., N. Y., Shell Petroleum Co., Atlantic Refining Company, Tidewater Oil Company, Keeshin Motor Express.

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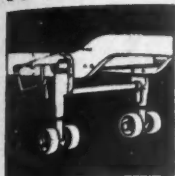
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CBB SETS
THERMO-BLOCKS

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THERMOID COMPANY - TRENTON, N. J.

AUSTIN

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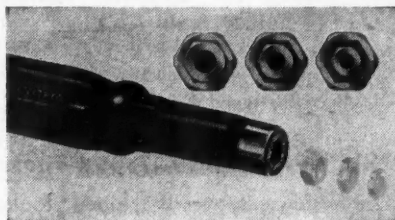
DE LUXE PRODUCTS CORP. LA PORTE, IND.

NEW PRODUCTS

(CONTINUED FROM PAGE 204)

hexagon nuts. By pressing the wrench over any of the three sizes of nuts, it automatically selects the proper nested hexagonal tube suited to that particular nut.

The Tesco Socket Wrench, manufactured by The Eastern Specialty Co., Philadelphia, is specifically designed for heavy-duty service. Its design is such that any stress incident to turning a nut is transferred to the



outer hardened-steel casing. It is also designed to provide a clearance through the barrel for studs up to 5½ in. in length, thus making it ideal for turning nuts on long studs. Both handle and barrel have molded insulation capable of withstanding a dielectric test for 1 min. at 5000 volts, RMS.

The Tesco Multi-Socket Wrench is said to be practically unbreakable, the handle being a die cast aluminum member pressure-molded to the hexagonal steel barrel.

Use Free Postcard For More Details.

P219. Upper Cylinder Lubricant

The Columbia Bedford Corp. of New York City is marketing an upper cylinder lubricant designed to correct sluggish condition of engines containing excessive carbon deposits, and the formation of the gumminess caused by the low wartime driving speed.

(TURN TO PAGE 206, PLEASE)

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Where
Secure
Seals Are
Vital

VICTOR
GASKETS, OIL SEALS
GREASE RETAINERS

DEVILBISS

Spray-Painting Equipment—Spray
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Oil Guns.

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DESIGNED ESPECIALLY
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TRUCKS

are fighting equipment

vital to Winning War..

KEEP YOURS FIRING

..every cylinder at
Top Efficiency!

**RAMCO 10
up**
PISTON RINGS

NEW PRODUCTS

(CONTINUED FROM PAGE 205)

P220. New Type Sponge

To meet the demand for natural sponges, James H. Rhodes & Co. of Chicago is marketing a new type Matacambia sponge. The Matacambia is a close-textured, extremely tough, flat surface sponge that is both absorbent and durable. It is said to be a quality product, economically priced, for all-round sponge usage, including wall washing and rough clean-up work.

Use Free Postcard For More Details.

P221. New Stellite-Tipped Tools

Two new styles of tipped tools especially designed for machining steel have been announced by Haynes Stellite Co., a unit of Union Carbide and Carbon Corp., Kokomo, Ind. The new tools consist of a cutting tip of Stellite 98M2 cobalt-base alloy brazed or butt-welded to a tough steel shank, with proper clearance and lead angles ground for turning steel.

These and other Stellite tipped tools are recommended for applications employing tools that have a large cross section or tools that are bent or offset, or for tool holders which make the use of solid tool bits impractical. In addition to use in turning, boring and facing operations, these tipped tools are also used for various types of forming and grooving operations.

They are ground with a 15-degree end cutting-edge angle, a 15-degree side cutting-edge angle, a 7-degree end relief angle, and a 7-degree side relief angle. These tools are furnished right and left hand with flat tops, so that users can grind their own side rake angle for each particular job. Five sizes of each tool are (TURN TO PAGE 207, PLEASE)

LIPE

HEAVY-DUTY Clutches

Insure Maximum Clutch Life

- ★ 20 ball-binged levers for uniform pressure, smooth engagements, easy disengagements.
- ★ Parallel disc contact. ★ No localized burning. ★ Long facing life.
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PERMANENT...
Vulcanized
TIRE AND TUBE REPAIRS
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Save space! Open upward!
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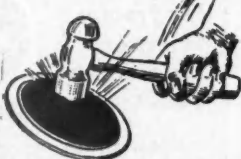
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J. W. Speaker Corp., Milwaukee, has prepared a two-color, loose leaf catalog showing all products available. (TURN TO PAGE 208, PLEASE)

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**Wire and Cable
Pawtucket, R. I.**

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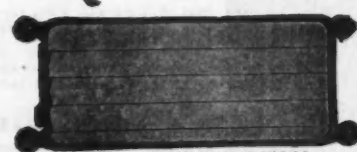
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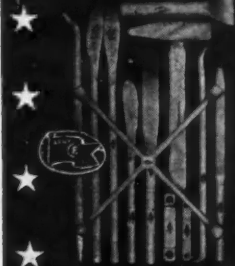
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Michigan City, Indiana

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SEE YOUR
LOCAL JOBBER
OR WRITE FOR
ILLUSTRATED
LITERATURE

THE KEN TOOL MFG. CO. AKRON, OHIO

(CONTINUED FROM PAGE 207)

able for immediate distribution. Included is a wide assortment of outfits and supplies for vulcanizing repairs for natural and synthetic rubber tubes, self-vulcanizing tire repair kits and blow-out patches.

The General Detroit Corporation, Detroit, has published a 48-page catalog called "The Buyers' Encyclopedia." This illustrates and also describes available fire fighting equipment, not only including extinguishers but such items as sirens, hose, hose carts and racks, etc., as well as booklets on fire fighting. There are items for police and plant protection, including caps, badges, handcuffs, etc., including booklets on jiu-jitsu. General maintenance and safety items include safety gloves, goggles, masks and helmets, first aid equipment, etc.

Improved Synthetic Rubber Developed by B. F. Goodrich

An improved general purpose synthetic rubber of the butadiene type, resulting from discoveries made in the laboratories of The B. F. Goodrich Co., Akron, Ohio, was announced by John L. Collyer, B. F. Goodrich president.

For reasons of security, complete information on the new material will not be available to the public until after the war. It was stated, however, that the introduction of a certain abundant natural material into rubber-making processes resulted in this superior synthetic, and that the improved rubber approaches natural rubber in characteristics during processing.

Tires made of this rubber, now undergoing extensive tests, show reduction in tread cracking and increased resistance to road wear.

Having greater tackiness, or adhesive properties during processing,
(TURN TO PAGE 209, PLEASE)

For Engine Bearings
Clutch Plates & Parts
King Bolt Sets

Monmouth
is the name

**THE COMPLETE LINE
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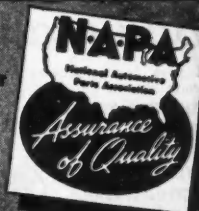
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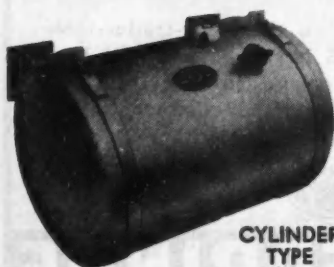
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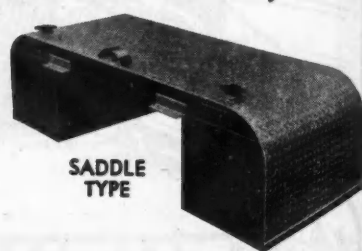


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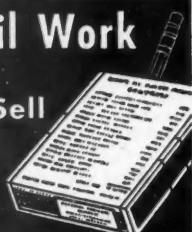


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Improved ventilation for cool operation, longer life and greater efficiency. They stand the strain of peak loads and are fully guaranteed.

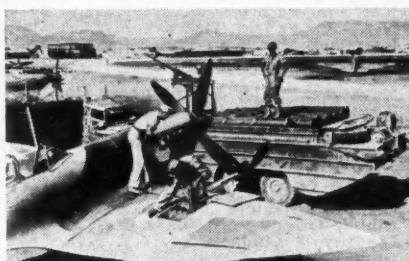


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this rubber lessens manufacturing difficulties experienced in handling other substitute rubbers. The B. F. Goodrich development is also said to shorten the amount of time now required to prepare synthetic rubbers for product manufacture. This man-made rubber can be produced in existing government plants without the necessity of major capital expenditures or changes in present equipment.

Work on this development was started by Dr. Charles F. Fryling of the B. F. Goodrich research staff more than two years ago in the company's laboratories and has been continued in Akron and elsewhere ever since in the effort to contribute a superior material for general use in the production of war products and civilian truck, bus and passenger car tires.



Top—For five days in a row, the "Ducks" operated by Seabee J. H. Prickett and his Beach Battalion unit were in the thick of the battle for the Salerno beach head. The "Ducks" would transport supplies from ship to shore to firing line, and on the return trip would carry wounded back to the ships. One "Duck" was successful in towing in a 110-foot LCT boat that had become disabled. Pictured above is a "Duck" taking on drums of high octane gas from a supply ship at sea, which were carried inland to Allied planes based on a captured air field.

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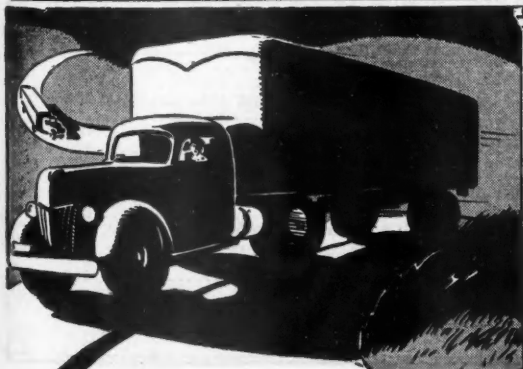
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with Gasoline!**

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